

Installation Guide

Ancon 25/14 Restraint System

For tying brickwork to insitu structures through an insulation layer

The Ancon 25/14 Restraint System is designed to tie brickwork to steel (typically SFS), concrete or timber. Screws fix through the channel and an insulation layer and into the substrate.

Ancon 25/14 channel features alternate 5.3mm and 9.5mm diameter fixing holes. The smaller 5.3mm diameter holes should be used with Ancon High-Thread Screws when fixing to steel or timber; the wider 9.5mm diameter holes should be used with Ancon CFS Screws when fixing to concrete.

Important. Using the incorrect hole and fixing screw combination invalidates the system performance.

To correctly position the channel, an Ancon Compression Sleeve (the same length as the insulation thickness) should always be used with CFS screws and when using high-thread screws in combination with flexible insulation material.

Once the channel is installed, stainless steel SD25 or basalt fibre Teplo-BF-CT 25 wall ties can be positioned at any point along its length and are built into the bed joints of the outer leaf of brickwork.

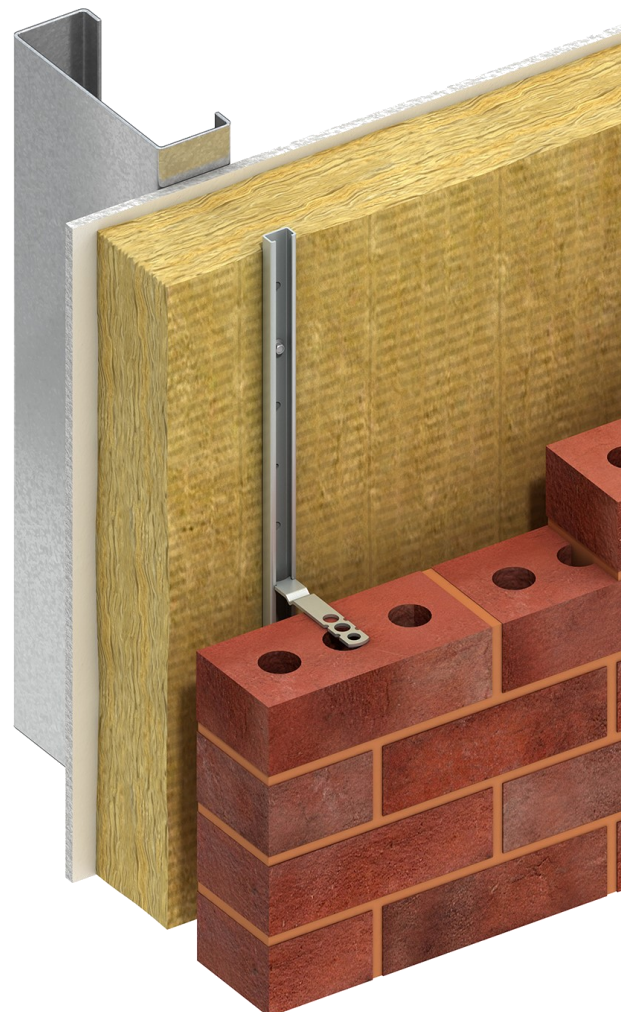
Recommended vertical centres for fixing screws and wall ties are shown on pages 3 and 4 respectively.

Fixing the channel to steel or timber

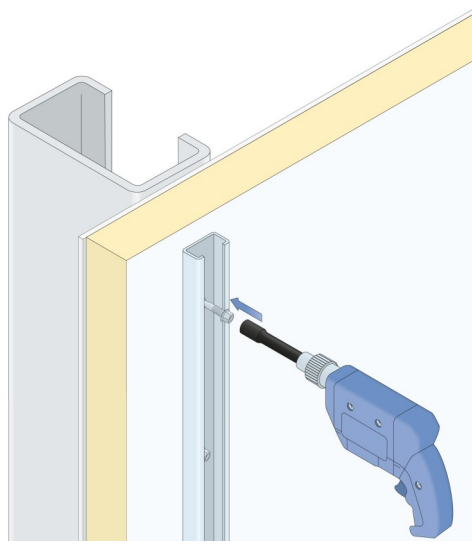
Ancon 25/14 channel is supplied with pre-punched holes, 5.3mm diameter, at close centres to accept the Ancon high-thread range of self-drilling screws.

These screws feature a shaped drill tip of hardened steel to allow installation without pre-drilling. To install the self-drilling self-tapping screws, a variable speed screwdriver (rather than an impact driver) set to a drive speed of around 1800rpm should be used. An SDS drive system to suit a 5/16" (8mm) hexagon socket is suggested. The channel section has a 16mm opening to allow all types of drive sockets to be used.

It should be noted that the self-drilling capacity of the screws can be reduced if they are used to drill through a layer of CP board before reaching the steel frame. For optimal screw self-drilling performance the CP board should be drilled in advance.



*Ancon 25/14 Channel features alternate 5.3mm and 9.5mm dia. holes
Small holes = High-Thread Screws (Steel, Timber)
Large holes = CFS Screws (Concrete)*



High Thread Stainless Steel Screws fixing into lightweight metal sections, typically SFS

Screw Reference	Steel Thickness	HTSS-65-2PT-W	HTSS-82-2PT-W	HTSS-100-2PT-W	HTSS-115-2PT-W	HTSS-135-2PT-W	HTSS-150-2PT-W	HTSS-180-2PT-W	HTSS-240-2PT-W
Material		Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Diameter (mm)		5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Length (mm)		65	82	100	115	135	150	180	240
Drilling Capacity (mm)		1.2 - 3.2	1.2 - 3.2	1.2 - 3.2	1.2 - 3.2	1.2 - 3.2	1.2 - 3.2	1.2 - 3.2	1.2 - 3.2
Resistance Tension (kN)	1.2mm	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
	1.4mm	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63
	1.6mm	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83
	1.8mm	2.12	2.12	2.12	2.12	2.12	2.12	2.12	2.12
	2.0mm	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64
	2.5mm	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79
	3.0mm	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75
Resistance Shear (kN)		3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
Maximum Insulation/ Material Thickness (mm)		30 - 46	35 - 61	43 - 79	60 - 94	65 - 114	80 - 129	110 - 159	165 - 220

Note: A factor of safety of 2 has been applied to the ultimate values to determine a design resistance.

High Thread Stainless Steel Screws fixing into timber (Min C16)

Screw Reference	HTSS-100-2PT-W	HTSS-115-2PT-W	HTSS-135-2PT-W	HTSS-150-2PT-W	HTSS-180-2PT-W	HTSS-240-2PT-W
Material	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Diameter (mm)	5.5	5.5	5.5	5.5	5.5	5.5
Length (mm)	100	115	135	150	180	240
Minimum Embedment (mm)	50	50	50	50	50	50
Resistance Tension (kN)	1.54	1.54	1.54	1.54	1.54	1.54
Resistance Shear (kN)	3.75	3.75	3.75	3.75	3.75	3.75
Maximum Insulation/ Material Thickness (mm)	46	61	81	96	126	186

Note: A factor of safety of 2 has been applied to the ultimate values to determine a design resistance. Minimum panel thickness is dependent on the timber thickness. Minimum = screw length - timber thickness. If the screw length is less than the timber thickness then the minimum panel thickness is zero.

Timber: Ancon High-Thread Screws are suitable for fixing Ancon 25/14 channel to timber frames. A 1mm gap should be left between each channel length.

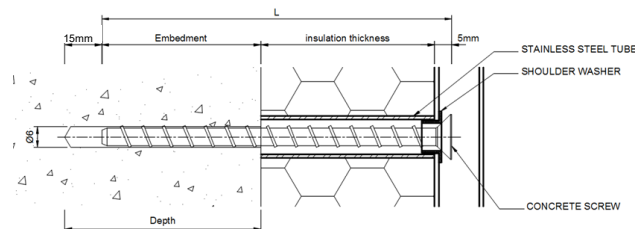
Fixing the channel to concrete

Ancon 25/14 Channel is supplied pre-punched with 9.5mm diameter holes to accept Ancon CFS Screws. These fixings should be used in combination with Ancon Compression Sleeves, supplied in the same length as the insulation thickness being used.

Using the channel holes as a guide, mark the precise position of the pilot holes. Remove channel and drill (6mm dia.) pilot holes through the insulation and into the concrete (see table for dimensions). Ensure drilled holes are clean and free from debris. Push an Ancon Compression Sleeve through the insulation at each fixing location.

Ensure the supplied shoulder washer is in place and fix the channel into position using a TX30 driver bit (see tables below for embedment & fixing centres). For embedments up to 30mm, a standard electric screwdriver can be used. For embedment depths greater than 30mm or for concrete grades higher than C30/37, a small impact driver may be necessary (max. torque setting 150Nm). We recommend the Fischer Cordless Impact Wrench FSS 18V 400 BL (setting 1-5) is used when installing concrete screws.

Note: Installation should begin on a low torque setting and be increased as required. Torque settings in excess of 150Nm may cause damage to the fixing. Concrete screws are not recommended for use with concrete grades greater than C35/45.



Concrete strength increases with age

Caution should be adopted when fixing screws into older concrete as the strength may have increased beyond the working range of the fixing.

CFS Screws for fixing into Concrete (min C20/25)

Screw Reference	CFS060*	CFS100	CFS110	CFS120	CFS130	CFS150	CFS180	CFS200	CFS212	CFS252	CFS302
Screw Length L (mm)	60	100	110	120	130	150	180	200	212	252	302
Recommended Pilot Hole Dia. X Depth (mm)	Ø6 x required embedment** +15										
Insulation/Material Thickness (mm)	0	30-45	46-55	56-65	66-75	76-95	96-125	126-145	146-180	181-220	221-270

* For fixing channel directly back to concrete where no insulation is present. Shoulder washer & compression sleeve not required, standard M8 nylon washer supplied to be used between screw and channel. ** Required embedment can be calculated as follows: Screw Length - Insulation Thickness.

Recommended Fixing Centres for Ancon 25/14 Fixing Screws by Application

Tie Type	Insulation Type	Insulation Thickness (mm)			Vertical Screw Spacing (mm)
		Fixing to Steel	Fixing to Timber ¹	Fixing to Concrete ²	
1	Rigid	Max 220	Max 186	Max. 270*	225
2	Rigid	Max 220	Max 186	Max. 270*	337.5
3	Rigid	Max 220	Max 186	Max. 270*	337.5 / 450**
4	Rigid	Max 220	Max 186	Max. 270*	337.5 / 450*
1	ROCKWOOL Rainscreen Duo Slab ®/ Isover Polterm Max Plus/	Max 180 (-220*)	Max 180 (-186*)	Max. 270*	225
2	Kingspan Facades K-Roc Rainscreen Slab/ Knauf Insulation Rocksilk® RainScreen Slab/ Xtratherm Stonewool/	Max 180 (-220*)	Max 180 (-186*)	Max. 270*	337.5
3	ROCKWOOL Nyrock® Rainscreen 032	Max 180 (-220*)	Max 180 (-186*)	Max. 270*	337.5 / 450**
4	ROCKWOOL Nyrock® Rainscreen 032	Max 180 (-220*)	Max 180 (-186*)	Max. 270*	337.5 / 450**
1	Other Insulation	Max 220*	Max 186*	Max. 270*	225
2	Other Insulation	Max 220*	Max 186*	Max. 270*	337.5
3	Other Insulation	Max 220*	Max 186*	Max. 270*	337.5 / 450**
4	Other Insulation	Max 220*	Max 186*	Max. 270*	337.5 / 450**

Table assumes 25/14 channels at maximum 600mm centres on plan ¹ Min C16 Timber. ² Min C20/25 Concrete. Centres shown achieve equivalent tie type performances to PD 6697, 6.2.2.5 Table 12 (Type M2 Mortar). *Requires an Ancon Compression Sleeve to be used (length to suit insulation thickness) in combination with the screw. ** 337.5mm centres for insulation thicknesses greater than 114mm.

Installing the wall ties

Ancon __25 wall ties can be inserted at any point in the channel and easily positioned to give the correct vertical centres.

They should have a minimum embedment of 55mm in the outer leaf and should be fitted such that the drip part of the tie (where present) is pointing downwards. Ties should be installed level or with a slight fall to the outer leaf, not towards the inner leaf as this could provide a path for moisture to cross the cavity.

When installing wall ties close to the end of a length of channel, ties should be located at a maximum of 50mm from the last fixing and no closer than 25mm to the end of the channel.

Wall ties should be pressed down in, and surrounded by, fresh mortar. Installed ties should be clear of mortar droppings.

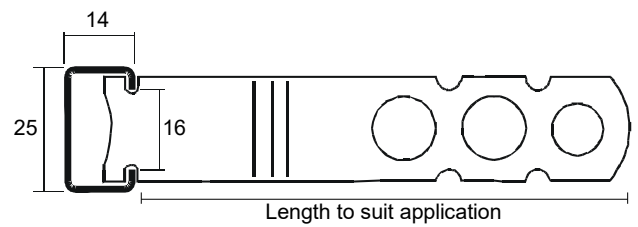
Recommended Fixing Centres for Wall Ties

Tie Type	Vertical Tie Spacing (mm)
1	300*
2	450
3	450
4	450

Assumes 25/14 channels installed at maximum 600mm centres on plan. See page 3 for fixing screw centres.

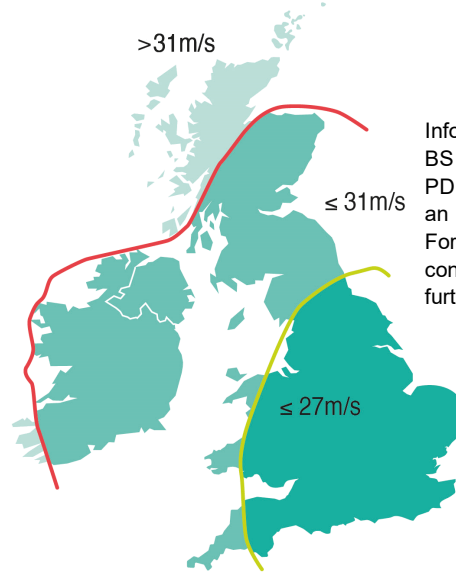
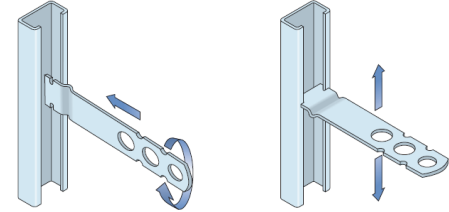
Centres shown achieve equivalent tie performances to PD 6697 6.2.2.5 Table 12 (M2 Mortar). Min C20/25 Concrete. Ancon Compression Sleeves to be used with fixings. *337.5mm centres for insulation thicknesses greater than 114mm.

**225mm vertical tie spacing for Teplo-Channel Ties 300mm and longer.



Ancon SD25 Tie & 25/14 Channel

25/14 Channel will accept all Ancon ties referenced __ 25.



Wind

Information adapted from NA to BS EN 1991-1-4:2005 for use with PD 6697:2019, calculating C_{alt} for an altitude of 150m above sea level. For some projects this may be conservative. Contact Leviat for further details.

Wall Tie Types

Required Wall Tie Type	Application	Maximum Building Height (m)	Geographical Location
Type 1	Heavy duty tie, suitable for most building types	Any height	Suitable for most sites. However, for relatively small or unusually shaped buildings in vulnerable areas, tie provision should be calculated
Type 2	General purpose tie, suitable for residential and small commercial buildings	15	Suitable for flat (less than 1 in 20) open sites where the fundamental basic wind velocity does not exceed 31m/s and altitude is not more than 150m above sea level
Type 3	Basic wall tie, suitable for residential and small commercial buildings	15	As Type 2 but fundamental basic wind velocity limited to 27m/s
Type 4	Light duty tie, suitable for box-form domestic dwellings	10	Suitable for flat sites (less than 1 in 20) in towns/cities where the fundamental basic wind velocity does not exceed 27m/s and altitude is not more than 150m above sea level

Notes: Fundamental basic wind velocity must be calculated for the specific altitude of the site, refer to Clause NA.2.4 in NA to BS EN 1991-1-4:2005. The table above provides only a brief summary of information. Refer to PD 6697:2019 and NA to BS EN 1991-1-4:2005 for complete information.

The Construction applications and details provided in this guide are indicative only. In every case installation should be entrusted to appropriately qualified and experienced persons. Normal handling precautions should be taken to avoid physical injury. The company cannot be held responsible for any injury as a result of using our products, unless such injury arises as a result of our negligence.

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