Installation Guidance: Ancon MDC Masonry Support Systems

Ancon MDC Masonry Support Systems are designed to support external masonry façades above openings and at horizontal movement joints. They are generally fixed to concrete or steel frames and adjustment is provided in every direction to allow for tolerance in the structural frame.

Important Notes

Masonry support systems form an important part of the final structure of a framed building and it is essential that the correct installation procedures are followed. This not only applies to the installation of the support system itself, but also to the building of the masonry supported by the system and the installation of the wall ties.

Care should be taken to avoid damaging the masonry support system prior to and during installation. All components should be stored under cover and away from direct sources of heat.

! Ancon stainless steel products are produced from sheared plate. As with all industrial fabrications these may present sharp edges. Suitable personal protective equipment should be worn at all times during handling and installation.

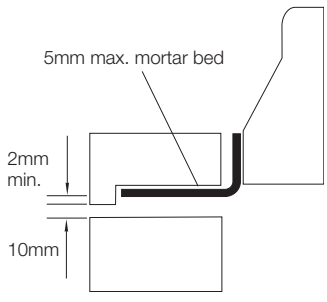
Installation of Ancon MDC

Ancon Masonry Support Systems must be installed in accordance with this guidance. If in doubt contact Ancon.

The masonry support system must be positioned at the correct level; there must be no gaps between the back of the bracket and the structure at both the fixing point and the lowest point of contact between the bracket and the structure. Where shims are used between the brackets and the structure they should be flat and the thickness limited to the outside diameter of the fixing, unless otherwise agreed with Ancon. The fixing bolts must be tightened to the correct torque using a calibrated torque wrench.

Setting the Support System at the Correct Level

It is usual for the support system to be set at least 2mm high; this is to allow for bedding in, deflection of the support system and movements associated with the fixing and shimming.

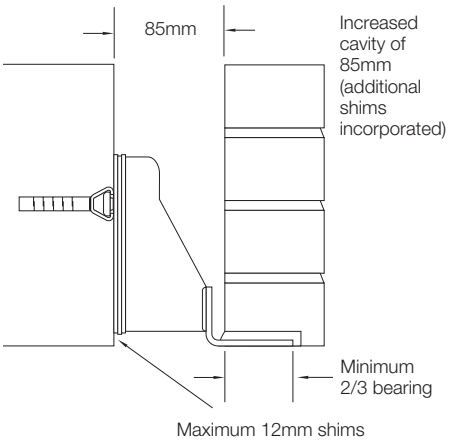


The mortar bed above the angle should be limited to a maximum thickness of 5mm. Where pistol (recessed) bricks are used which have a deep cut-out, the angle will need to be set higher to limit the mortar bed to a maximum of 5mm.

In some cases it may be necessary to make an additional allowance for movement of the structure, especially when the structure is a steel frame.

Cavity Variation

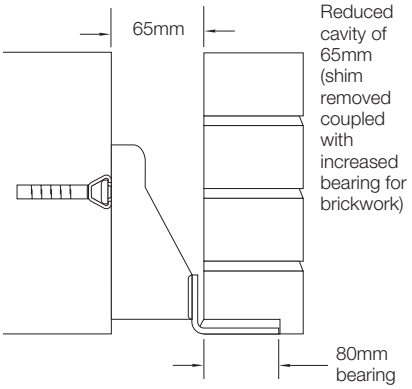
1. An increase in cavity width is accommodated by inserting full height stainless steel shims between the structural face and the back of the MDC bracket. The maximum allowable shim thickness for a given project is stated on our layout drawings. Shims can be included between the bracket and the frame up to a maximum thickness of the outside diameter of the fixing bolt, or 16mm, whichever is less. In exceptional circumstances, increased shimming can be accommodated, only after consultation with Ancon's technical staff.



Increased cavity

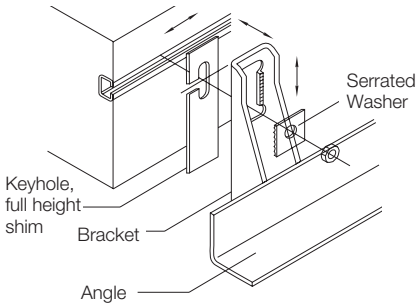
! When utilising shims, they must be of sufficient length to extend to the bottom of the bracket.

2. A decrease in cavity width is overcome by re-positioning the brick on the support angle; this increases the amount of actual support under the brick. This operation may necessitate cutting the brick to clear the angle radius. Design criteria govern the extent of allowable movement.



Reduced cavity

Vertical Adjustment



Vertical adjustment is achieved by the deep slot in the back of the bracket. Ancon MDC Support Systems are designed to accommodate adjustment of ±20mm. The slot depth accommodates the vertical adjustment of Ancon Steelgrip bolts with an outside diameter of 19mm. Fixings with a smaller diameter should not be installed to the top or bottom of the slot.

It is important to utilise the fixings supplied as these are an integral component of the design. Serrated washers must be installed in the correct orientation i.e. serrations horizontal to match those on the bracket. Ensure nuts are tightened to the tightening torque specified on the drawings (see Ancon's Bolt Fixings Installation Guide for further information).

Horizontal Adjustment

Continuous support systems are designed with a 10mm nominal gap between individual units. This provides a degree of adjustment to accommodate variation in the structure.

Cast-in channel will provide virtually unlimited horizontal adjustment; slotted holes in a steel edge member will offer more limited adjustment.

Brickwork Bearing

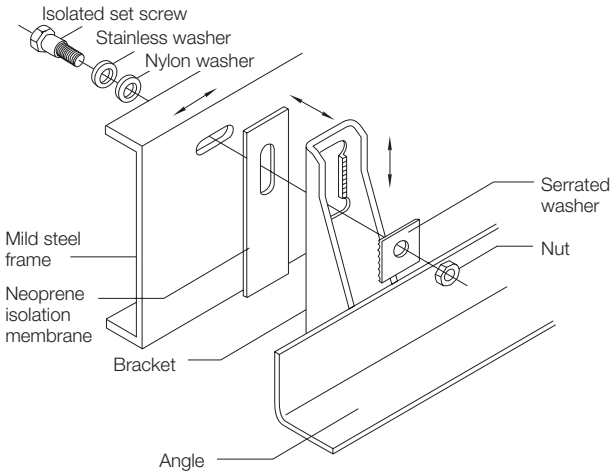
Angles should be set so that the back of the brick is within 5mm of the back of the angle. This will ensure that the minimum 2/3 bearing is achieved for the brickwork. Failure to ensure that the maximum of 5mm is not exceeded may result in the brickwork 'bellying'. Refer to project specific drawings supplied by Ancon.

Bi-Metallic Corrosion

Ancon Support Systems are manufactured from grade 1.4301 (304) stainless steel. Bi-metallic corrosion may occur in a damp environment where the stainless steel support system is bolted to the structural steel frame. This will not affect the stainless steel, but could slightly increase the corrosion rate of the carbon steel.

When Ancon Masonry Support Systems are fixed back to steel structures, the structural component may be isolated from the stainless steel support system to prevent the possibility of bi-metallic corrosion. This can be achieved in one of two ways:

1. Painting the areas that will be in contact with the support system
2. Inserting an isolation shim (as shown below)



Thermal Breaks

Ancon Masonry Support Systems can be supplied with Thermal Breaks to minimise cold bridging and improve the energy efficiency of your building project. Shaped like a standard Ancon key-hole shim, these Thermal Breaks are manufactured from a durable fibre-reinforced thermoset plastic, which has a thermal conductivity of just 0.3W/mK.

Building on Masonry Supports

When installing an Ancon Masonry Support System it is important to follow the stages below.

1. Building of First Course of Masonry

The first course of masonry, usually a pistol brick, should be built on a thin bed of mortar on the angle of no more than 5mm thickness. Thick mortar joints under pistol bricks, particularly the three-hole type can allow the brick to rotate especially if the mortar has not had sufficient time to cure. The bottom of the brick should be positioned to allow for the expected deflections.

Before any further courses are built, the mortar should be allowed sufficient time to cure. The time period will vary, but should be at least one to two days, and will be more if the mortar has additives to extend its workability and/or in particularly cold weather.

! Exercise caution when using bricks with large open volumes. The reduced footprint on the mortar bed may require the first course to be left longer to cure before continuing with the build.

2. Building of Next Five Courses

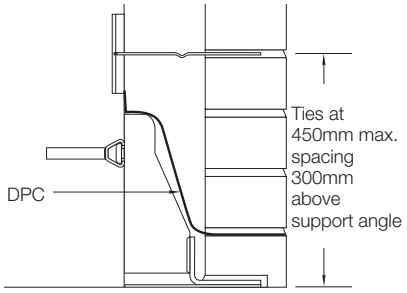
Another five courses should be built which will include a DPC course and a line of wall ties above the support level. These ties should be built within 225-300mm above the support angle and at 450-600mm horizontal spacing.

These ties are essential and it is important that they are securely fixed back to a solid structure. It is difficult to assess the precise load in these ties because this will vary depending on the thickness of the support angle, the density of masonry and the height of masonry at any particular time; however it should be no more than 300N per tie. Ancon strip ties with a standard 3-hole "S" end will provide a high factor of safety against failure after two days.

! Ensure that the first ties are properly positioned and are securely fixed back to a rigid structure.

Damp-Proof Course

As stated in BS 8215:1991, Design and Installation of Damp-proof Courses in Masonry Construction, to install a flexible DPC, first lay a full even bed of the same type of mortar as in the course below and flush it up level. Lay the DPC on the mortar bed in a continuous length for the full width of the leaf. Make sure that there is at least a 100mm overlap at any joint or angle and that the overlap is sealed or welted as appropriate. As soon as possible after laying the DPC, lay at least one further course of masonry, including a full bed of mortar: this will help develop good adhesion between masonry units, mortar and DPC. Please note, when proprietary cavity trays are used they should be installed according to the manufacturer's recommendations.



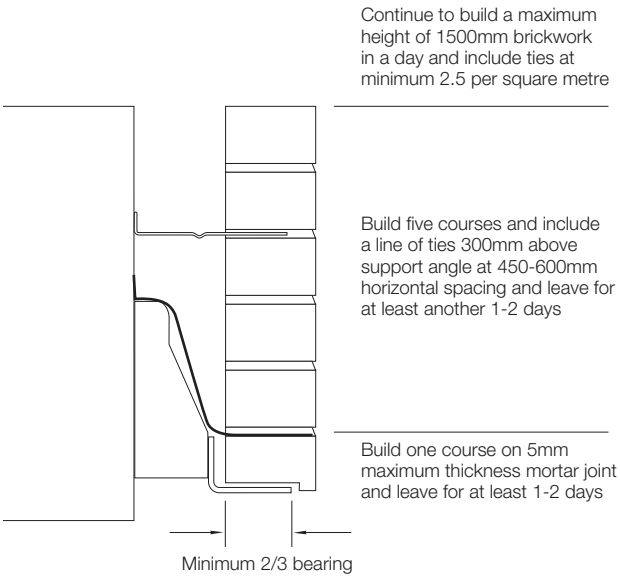
Before any further courses are built, the mortar should be allowed sufficient time to cure for the ties to take the restraining load as the brickwork proceeds. The time period will vary, but should be at least two days, and will be more if the mortar has additives to extend its workability and/or in particularly cold weather.

3. Building of Subsequent Courses of Masonry

Further courses can be added in stages but must not exceed the 1500mm maximum in one day recommended by the latest PD 6697. Wall ties must be included at the minimum spacing of 900mm horizontal centres and 450mm vertical centres, within 450mm of the first line of ties above the masonry support. In some cases closer spacing may be specified. Additional ties will be required at unrestrained edges and should be in accordance with the requirements of the latest PD 6697.

Summary

1. Position masonry support system allowing for minimum 2mm deflection.
2. Limit shims to the diameter of fixing or 16mm, whichever is less.
3. Tighten fixing to specified torque using a calibrated torque wrench.
4. Ensure proper contact between back of bracket and structure.
5. Build first line of bricks with 5mm maximum mortar bed.
6. Leave at least 1-2 days for mortar to cure.
7. Build next 5 courses including DPC and ties 300mm above support level and at 450-600mm horizontal spacing.
8. Leave another 1-2 days for mortar to cure.
9. Continue building up to 1500mm height a day incorporating ties at maximum 900mm horizontal spacing and 450mm vertical spacing (unless closer spacings are specified). The ties should be evenly distributed over the wall area, except around openings, and should preferably be staggered.



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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. Ancon Ltd cannot be held responsible for any injury as a result of using our products, unless such injury arises as a result of our negligence.

Installation Guidance: AnconOptima Masonry Support Systems

The AnconOptima system comprises a two-step angle (with pre-marked fixing zones), brackets and locking wedges. The angle slides into position, through cut-outs in the brackets. Once the angle is positioned, a locking wedge is tapped in place with a hammer, through the notches in each bracket.

Brackets are available as standard to suit cavities from 60mm to 150mm in 5mm increments and are universal for the three AnconOptima systems. All angles, excluding corner sections, are designed to be used with two brackets. The fixing zones on the angles are colour coded for the three standard systems.

System	Maximum Unfactored Load* (kN/m)	Angle Length (mm)	Nominal Length** (mm)	Fixing Zone Colour	Bracket Position (mm)
AnconOptima 10	10	990	1000	Red	500 centres
AnconOptima 12	12	990	1000	Green	500 centres
AnconOptima 14	14	790	800	Blue	400 centres

*Dependent on cavity width and type of fixing being used.
**Including 10mm gap between angles.

Important Notes

Masonry support systems form an important part of the final structure of a framed building and it is essential that the correct installation procedures are followed. This not only applies to the installation of the support system itself, but also to the building of the masonry supported by the system and the installation of the wall ties.

Care should be taken to avoid damaging the masonry support system prior to and during installation. All components should be stored under cover and away from direct sources of heat.

! Ancon stainless steel products are produced from sheared plate. As with all industrial fabrications these may present sharp edges. Suitable personal protective equipment should be worn at all times during handling and installation.

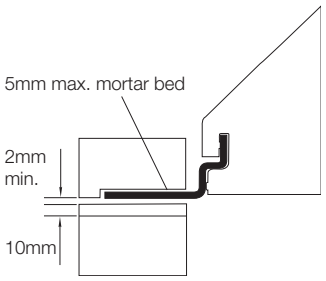
Installation of AnconOptima

AnconOptima must be installed in accordance with this guidance. If in doubt contact Ancon.

The system must be positioned at the correct level; there must be no gaps between the back of the bracket and the structure at both the fixing point and the lowest point of contact between the bracket and the structure. Where shims are used between the brackets and the structure they should be flat and the thickness limited to the outside diameter of the fixing bolt, unless otherwise agreed with Ancon. The fixing bolts must be tightened to the correct torque using a calibrated torque wrench.

Setting the Support System at the Correct Level

It is usual for the support system to be set at least 2mm high; this is to allow for bedding in, deflection of the support system and movements associated with the fixing and shimming.



The mortar bed above the angle should be limited to a maximum thickness of 5mm. Where pistol (recessed) bricks are used which have a deep cut-out, the angle will need to be set higher to limit the mortar bed to a maximum of 5mm.

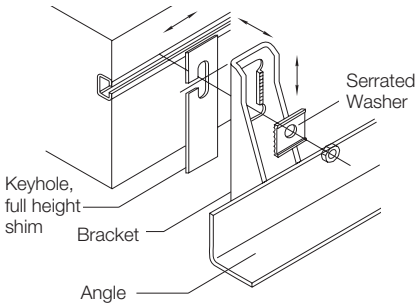
In some cases it may be necessary to make an additional allowance for movement of the structure, especially when the structure is a steel frame.

Cavity Variation

1. An increase in cavity width is accommodated by changing the standard bracket depth. Fine adjustment can be achieved by inserting full height stainless steel shims between the structural face and the back of the bracket. Brackets are available in a range of depths at 5mm intervals. Shims can be included between the bracket and the frame. With brackets available in 5mm increments, shims should only be necessary up to a thickness of 4mm. Extension plates should not be used with AnconOptima.
2. A decrease in cavity width is overcome by changing the standard bracket depth. Fine adjustment can be achieved by re-positioning the brick on the support angle, thus increasing the amount of actual support under the brick. This operation may necessitate cutting the brick to clear the angle radius. Design criteria govern the extent of allowable movement.

! Do not attempt to modify or alter masonry support brackets.

Vertical Adjustment



Vertical adjustment is achieved by the deep slot in the back of the bracket. AnconOptima Support Systems are designed to accommodate adjustment of ±20mm. The slot depth accommodates the vertical adjustment of Ancon Steelgrip bolts with an outside diameter of 19mm. Fixings with a smaller diameter should not be installed to the top or bottom of the slot.

It is important to utilise the fixings supplied as these are an integral component of the design. Serrated washers must be installed in the correct orientation using the incorporated orientation mark ensuring these are in a horizontal position. Ensure nuts are tightened to the tightening torque specified on the drawings (see Ancon's Bolt Fixings Installation Guide for further information).

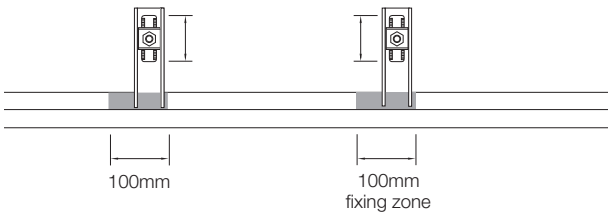
Horizontal Adjustment

AnconOptima angles have a 100mm pre-marked fixing zone which provides 50mm horizontal adjustment.

If fixing into concrete with expansion bolts, the bracket can be moved to eliminate clashes between the bolts and reinforcing bars.

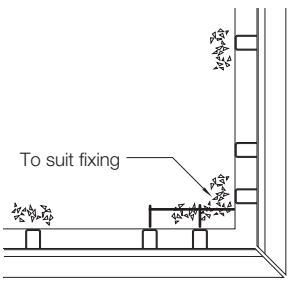
Horizontal adjustment can be increased by fixing the system to an Ancon channel cast into the face of the concrete.

If fixing to steelwork, the brackets can be moved to align with the location of a hole, negating the need for a more expensive horizontal slot to be provided.



Corners

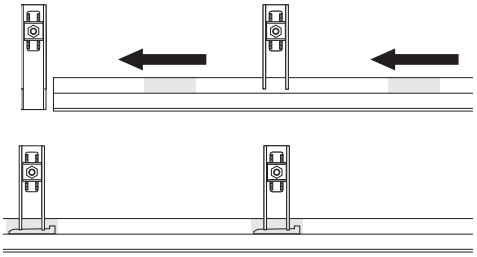
External corners require a different angle. These are usually 850mm long and need three brackets, two at the corner (150mm between) and a third bracket near the other end of the angle. A drawing can be provided for each contract showing bracket positions upon request.



! Do not attempt to cut or modify masonry support corner systems.

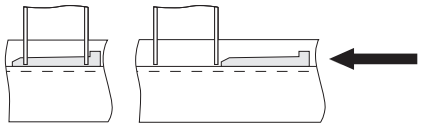
Main Runs of Support

Where holes for fixings need to be drilled, this can be carried out for the entire run once the corner angles have been fixed. The preferred technique of installers is to loosely fix two brackets and simply slide the angle into position ensuring that the brackets are within the coloured zones. Insert the locking wedges before tightening the bolts to secure the brackets. There should be a nominal 10mm gap between angles. The last angle may require the brackets to be positioned on the angle prior to fixing.



Locking Wedges

Each support bracket is supplied with a locking wedge. Use of the wedge ensures that the angle is properly seated in the bracket. Wedges should be tapped with a hammer, into the notches on the bracket. They can be installed from either side of the bracket. Wedges which have been removed should not be reused.

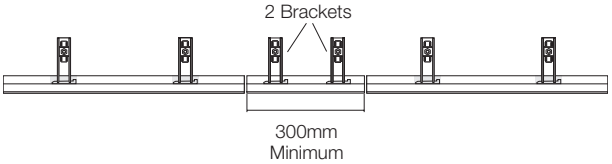


! Do not reuse any wedges. Do not use anything other than the wedges supplied by Ancon.

Cutting on Site

AnconOptima angles are supplied in standard lengths. The last angle to be fixed may need to be cut on site to suit the application and should still feature two brackets. This angle must be no shorter than 300mm.

The adjacent angle may need to be cut back so that the final angle is at least 300mm long. Corner angles should not be cut.



! When cutting the AnconOptima angle ensure that all site Health and Safety rules are followed at all times. It is essential that any persons intending to cut the support angle are familiar with these rules

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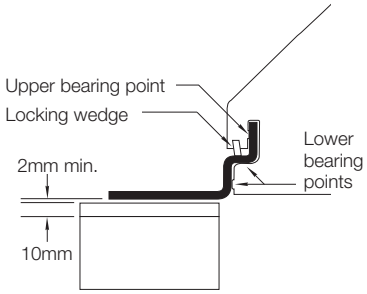
Location of Angle in Bracket

AnconOptima must always be installed with the angle in contact with the bearing sections of the bracket. The locking wedges will normally ensure the correct seating but particular care should be taken if the face of the structure is sloping, or if the angle is resting on the compressible filler. If the fixing face is uneven, low points may need to be packed to ensure the backs of the brackets are in-line. Any packs should be fixed securely.



Brickwork Bearing

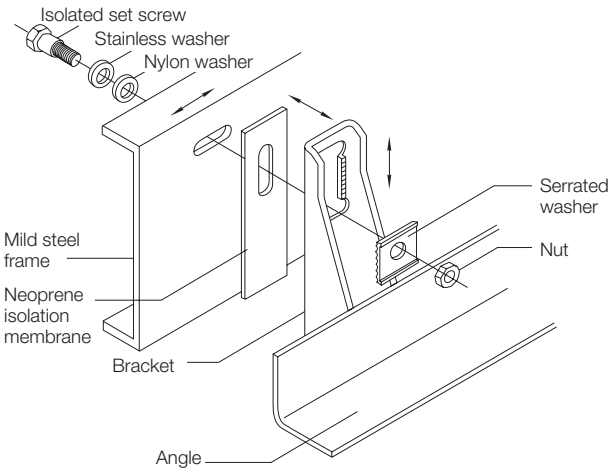
Angles should be set so that the back of the brick is within 5mm of the back of the angle. This will ensure that the minimum 2/3 bearing is achieved for the brickwork.

Bi-Metallic Corrosion

Ancon Support Systems are manufactured from grade 1.4301 (304) stainless steel. Bi-metallic corrosion may occur in a damp environment where the stainless steel support system is bolted to the structural steel frame. This will not affect the stainless steel, but could slightly increase the corrosion rate of the carbon steel.

When Ancon Masonry Support Systems are fixed back to steel structures, the structural component may be isolated from the stainless steel support system to prevent the possibility of bi-metallic corrosion. This can be achieved in one of two ways:

1. Painting the areas that will be in contact with the support system
2. Inserting an isolation shim (as shown below)



Thermal Breaks

Ancon masonry support systems can be supplied with Thermal Breaks to minimise cold bridging and improve the energy efficiency of your building project. Shaped like a standard Ancon key-hole shim, these Thermal Breaks are manufactured from a durable fibre-reinforced thermoset plastic, which has a thermal conductivity of just 0.3W/mK.

Building on Masonry Support System

When installing an Ancon Masonry Support System it is important to follow the stages below.

1. Building of First Course of Masonry

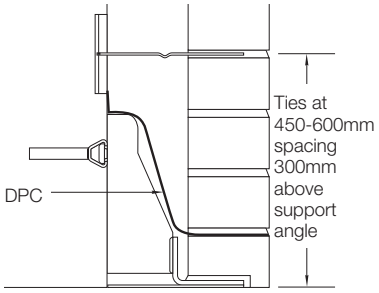
The first course of masonry, usually a pistol brick, should be built on a thin bed of mortar on the angle of no more than 5mm thickness. Thick mortar joints under pistol bricks, particularly the three-hole type can allow the brick to rotate especially if the mortar has not had sufficient time to cure. The bottom of the brick should be positioned to allow for the expected deflections.

Before any further courses are built, the mortar should be allowed sufficient time to cure. The time period will vary, but should be at least one to two days, and will be more if the mortar has additives to extend its workability and/or in particularly cold weather.

! Exercise caution when using bricks with large open volumes. The reduced footprint on the mortar bed may require the first course to be left longer to cure before continuing with the build.

2. Building of Next Five Courses

Another five courses should be built which will include a DPC course and a line of wall ties above the support level. These ties should be built within 225-300mm above the support angle and at 450-600mm horizontal spacing. These ties are essential and it is important that they are securely fixed back to a solid structure. It is difficult to assess the precise load in these ties because this will vary depending on the thickness of the support angle, the density of masonry and the height of masonry at any particular time; however it should be no more than 300N per tie. Ancon strip ties with a standard 3-hole “S” end will provide a high factor of safety against failure after two days.



Damp-Proof Course

As stated in BS 8215:1991, Design and Installation of Damp-proof Courses in Masonry Construction, to install a flexible DPC, first lay a full even bed of the same type of mortar as in the course below and flush it up level. Lay the DPC on the mortar bed in a continuous length for the full width of the leaf. Make sure that there is at least a 100mm overlap at any joint or angle and that the overlap is sealed or welted as appropriate. As soon as possible after laying the DPC, lay at least one further course of masonry, including a full bed of mortar: this will help develop good adhesion between masonry units, mortar and DPC. Please note, when proprietary cavity trays are used they should be installed according to the manufacturer's recommendations.

! Ensure that the first ties are properly positioned and are securely fixed back to a rigid structure.

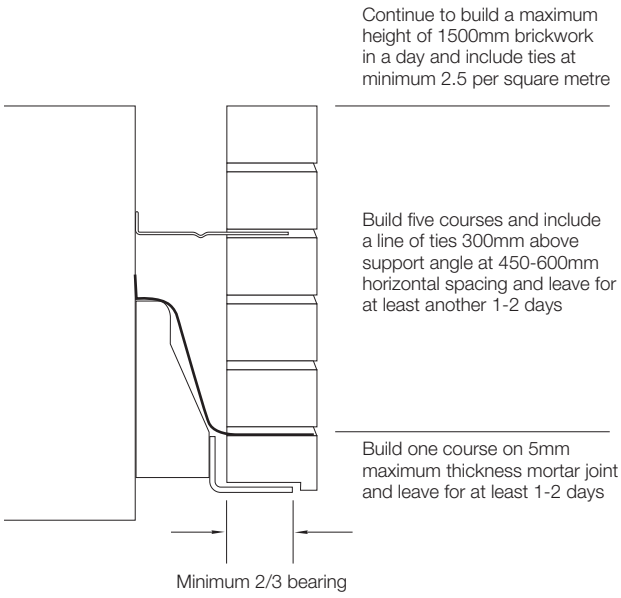
Before any further courses are built, the mortar should be allowed sufficient time to cure for the ties to take the restraining load as the brickwork proceeds. The time period will vary, but should be at least two days, and will be more if the mortar has additives to extend its workability and/or in particularly cold weather.

3. Building of Subsequent Courses of Masonry

Further courses can be added in stages but must not exceed the 1500mm maximum in one day recommended by the latest PD 6697. Wall ties must be included at the minimum spacing of 900mm horizontal centres and 450mm vertical centres, within 450mm of the first line of ties above the masonry support. In some cases closer spacing may be specified. Additional ties will be required at unrestrained edges and should be in accordance with the requirements of the latest PD 6697.

Summary

1. Position masonry support system allowing for minimum 2mm deflection.
2. Limit shims 4mm unless agreed with Ancon Technical Service.
3. Tighten fixing to specified torque using a calibrated torque wrench.
4. Install locking wedges and ensure proper contact between bracket and angle, and back of bracket and structure.
5. Build first line of bricks with 5mm maximum mortar bed.
6. Leave at least 1-2 days for mortar to cure.
7. Build next 5 courses including DPC and ties 300mm above support level and at 450-600mm horizontal spacing.
8. Leave another 1-2 days for mortar to cure.
9. Continue building up to 1500mm height a day incorporating ties at maximum 900mm horizontal spacing and 450mm vertical spacing (unless closer spacings are specified). The ties should be evenly distributed over the wall area, except around openings, and should preferably be staggered.



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INSTALLATION GUIDE

BRACKET SUPPORT SYSTEM

Ancon Bracket Support Systems are generally fixed to concrete frames. Vertical, horizontal and lateral tolerances are catered for in the following procedure.

CAVITY VARIATION

1. **Increase in cavity** is accommodated by inserting full height stainless steel shims between the structural face and the back of the bracket up to a maximum thickness of the outside diameter of the fixing bolt or 16mm, whichever is less. When utilising shims they must be of sufficient length to extend to the bottom of the bracket in all situations.

2. **Decrease in cavity** is overcome by re-positioning the brick on the support plate, thus increasing the amount of actual support under the brick. Design criteria govern the extent of allowable movement.

HORIZONTAL ADJUSTMENT

Horizontal cast-in channel will provide virtually unlimited lateral adjustment of the brackets.

VERTICAL ADJUSTMENT

The vertical slot in the back of the brackets allow up to 50mm vertical adjustment i.e. ±25mm with an M12 bolt.

FIXINGS

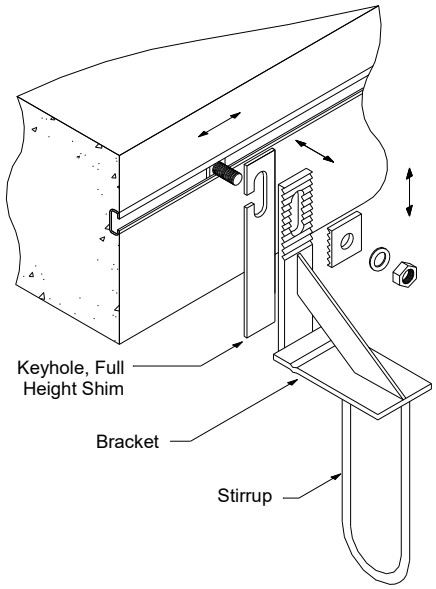
It is important to utilise the fixings supplied as these are an integral component of the design. Serrated washers must be installed in the correct orientation i.e serrations horizontal to match those on the bracket. Ensure nuts are tightened to the specified tightening torque (see Installation Guide 'Bolts'). Where individual brackets incorporate stirrups to support hanging brickwork it is important that the following points are noted.

1. The brickwork requires support formwork until the mortar has set, and achieved a suitable strength.
2. All perpends and the holes which accommodate the stitching rods must be completely filled with mortar.
3. The 300mm long stitching rods should overlap the stirrups by approximately 30mm each end.
4. Where high strength bricks with low water absorption are used, the mortar must be of sufficient strength to ensure bonding and cohesion of the suspended masonry.

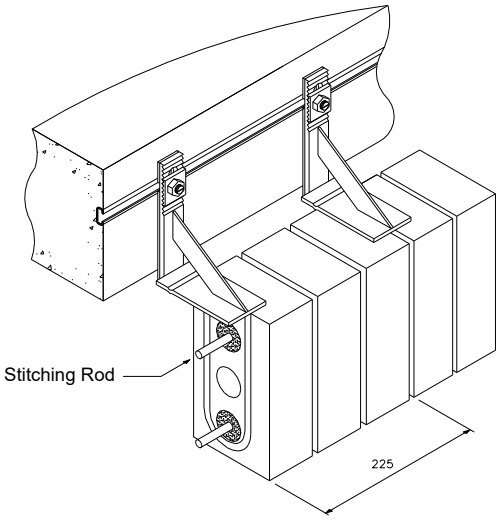
Wall ties should be provided at a recommended maximum horizontal spacing of 450mm within 300mm above the support angle.

SAFETY PRECAUTIONS

Ancon stainless steel products are produced from sheared plate. As with all such industrial fabrications, these may present sharp edges. **Suitable personal protective equipment should be worn at all times during handling and installation.**



ADJUSTMENT OF INDIVIDUAL BRACKET



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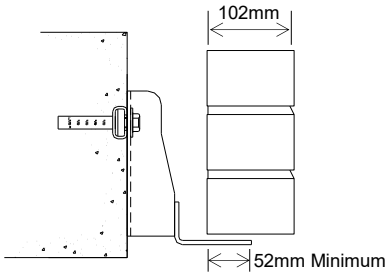
INSTALLATION GUIDE

EXTENSION PLATE

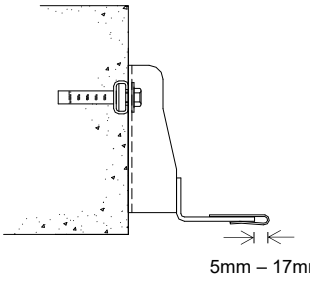
As an alternative to shims, Ancon Extension Plates can sometimes be used to increase the bearing for the brickwork. Ancon Extension Plates are designed to be used with Ancon brickwork support systems. The particular application should be agreed with Ancon's Technical Department to ensure that the system and extension plates are both suitable.

Ancon Extension Plates are an alternative to shims, they will NOT normally be used in conjunction with shims unless this has been agreed with our Technical Department.



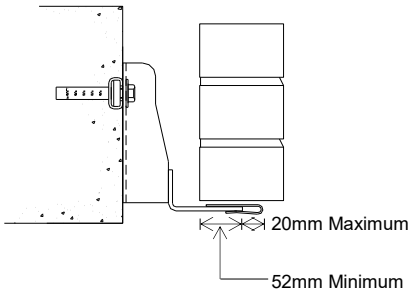
SUPPORT LEG

The support leg of the angle must provide a minimum of 52mm bearing for standard single skin brickwork for the entire length of the support. Without this bearing the brickwork may become unstable. This must be checked before work proceeds.



EXTENSION PLATES

The extension plates are pushed onto the leg of the angle with the flat surface on top. They are adjusted until the required amount of extension is achieved, this will be from 5mm to 17mm. The brickwork can now be built on the support with Extension Plates. The plates can provide extra bearing but they should not extend more than 20mm from the front of the angle. Extension plates are usually 400mm long and fixed with a nominal gap between the plates of approximately 10mm.



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MASONRY SUPPORT SYSTEMS

ACCOMMODATING CAVITY VARIATIONS

Ancon®

Welded bracket-angle and plain angle brickwork support systems experience the same limitations when accommodating cavity variations. Support systems are designed and manufactured to a set cavity dimension. Adjustment is provided by the use of shims. Without the use of any shims a cavity increase of 2mm and a reduction of up to 10mm (+2 -10) can be achieved. With the use of shims this range can be extended to +28mm and –10mm.

REDUCTIONS IN CAVITY SIZE

A reduction in cavity size is accommodated by increasing the bearing of the masonry on the angle. The amount of reduction that can be accommodated is restricted by the gap between the vertical leg of the angle and the back of the masonry. This accommodates **-7mm** when using a pistol brick and **-10mm** otherwise. It should be noted however that the gap between the angle toe and back of a pistol brick nib may restrict this adjustment.

INCREASES IN CAVITY SIZE

An increase in cavity size is accommodated by decreasing the bearing on the support angle, using loose shims, solid shim packs, or extension plates.

Decreasing bearing – The standard bearing provided by a masonry support angle is 70mm. The minimum bearing for a 102mm brick is 68mm accommodating a cavity increase of **+2mm**.

Loose shims – The amount of loose shims that can be used is limited to the diameter of the bolt being used – usually **+12mm**. Tests show that installing shims in excess of this introduces excessive bending stresses to the bolt. Ancon supply shims in 2, 3, 4, 5 and 6mm thicknesses.

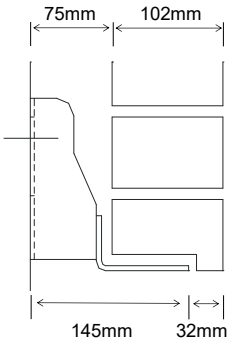
When utilising shims they must be of sufficient length to extend to the bottom of the bracket.

Solid shim packs – Larger shim packs can be used, however they must be one unit and must have a hole to suit the bolt being used. This hole is to prevent bending of the bolt and therefore shims with a vertical slot are not suitable. Solid shim packs in 15, 20 and 25mm can be supplied. In conjunction with a single 3mm standard loose shim this system can accommodate cavity increases up to **+28mm**. The maximum solid shim pack that can be used is 25mm thick.

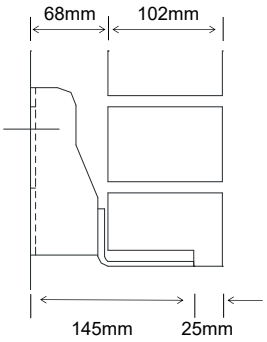
When utilising shims they must be of sufficient length to extend to the bottom of the bracket.

Extension plates – Extension plates can be used to extend the support angle's bearing leg to accommodate a cavity increase of **+17mm**. **They are only suitable for some support angle designs and therefore each application must be checked by Ancon's technical staff prior to use. Extension plates should not be used in conjunction with shims.**

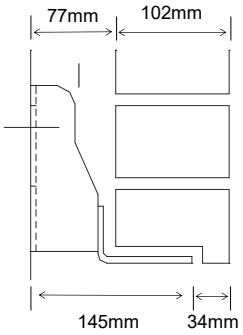
Design Cavity



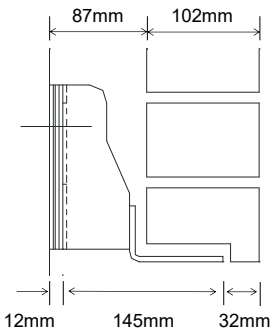
Reduced Cavity : -7mm



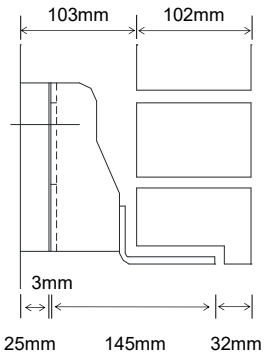
Increased Cavity No Shims : +2mm



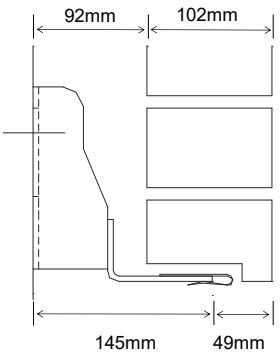
Maximum Loose Shims: +12mm



25mm Solid Shim Pack and Loose 3mm: +28mm



Extension Plate: +17mm



ACCOMMODATING CAVITY VARIATIONS

INCORPORATING SHIMS INTO THE DESIGN

The majority of customers choose to have the system designed without a basic shim allowance. It is however possible to incorporate shims into the standard design if required. Whilst adding shims to the basic design does alter the balance of the cavity range, it also increases the cost. For example, adding 5mm shims as standard would alter the maximum cavity variation to +23mm and –15mm and would cost approximately £5-10 extra per metre (depending on the system).

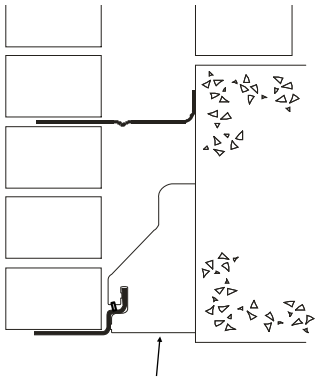
ACCOMMODATING LARGER CAVITY VARIATIONS

Cavities can sometimes exceed the adjustment provided by shims and extension plates. Unfortunately, if the angles have already been delivered to site before this is discovered it will be necessary to purchase replacement angles.

Please ensure that survey information is issued to Ancon in the correct format to enable us to recalculate the designs, check corner details and manufacture the support angles to suit actual site conditions. A copy of the Ancon support angle drawing should be over marked with the structural cavity required for each angle, as shown in the example below. If necessary a single angle can accommodate a large cavity variance by splitting into two pieces with a different cavity for each.

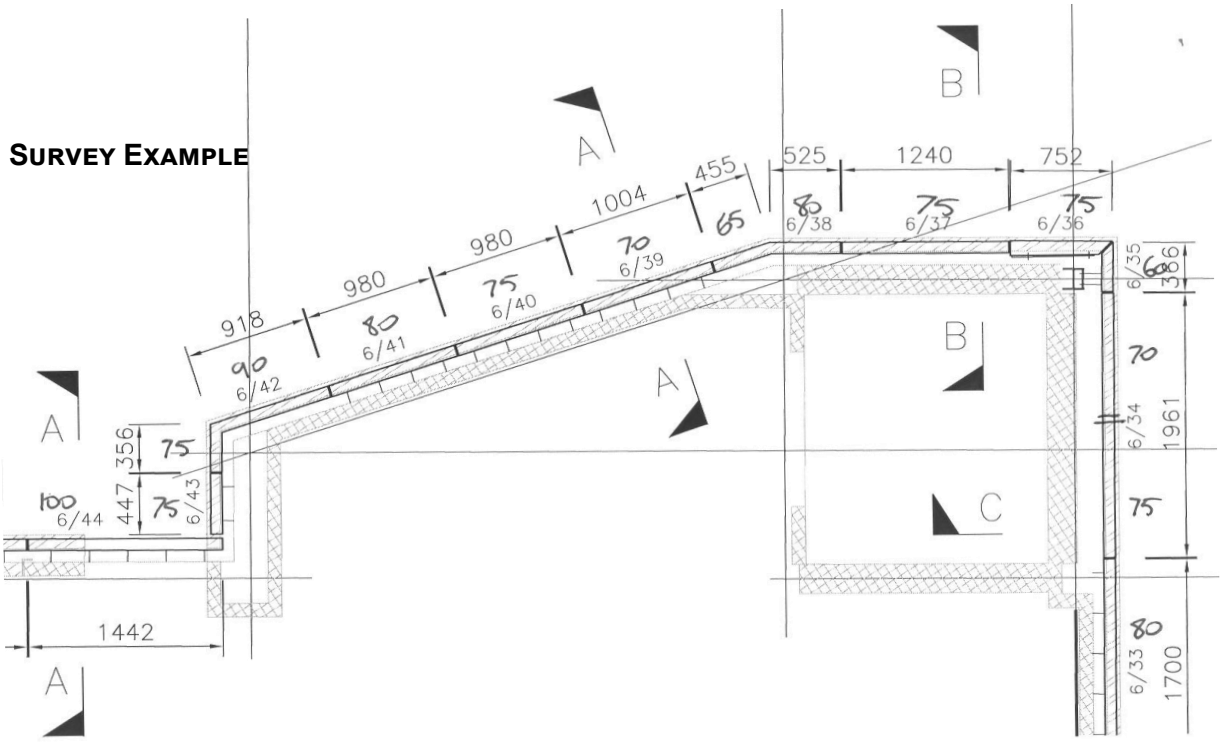
ANCONOPTIMA SYSTEM

An alternative to the MDC and CFA support systems is the AnconOptima system. This latest development in masonry support incorporates a two step angle and a range of interchangeable brackets to enable cavities of 60–130mm to be accommodated. Standard AnconOptima systems to support loads of 10kN, 12kN and 14kN are available and depending on the fixings used brackets are simply changed on site to allow for cavity variations. More detailed information on the AnconOptima and other support systems is available in our literature.



AnconOptima interchangeable brackets to suit variations in cavity size

SURVEY EXAMPLE



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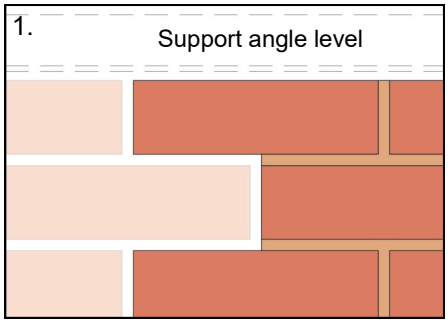
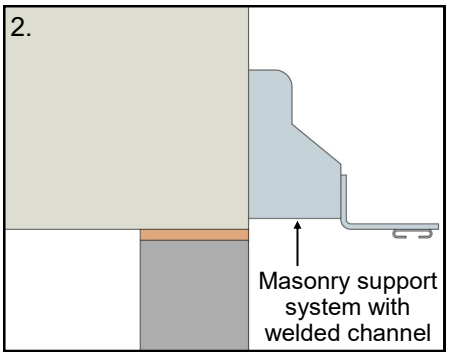
Installation Guide
HANGING BRICKWORK-
HANGER TIE SYSTEM FOR SOLID BRICKS

Installation Procedure

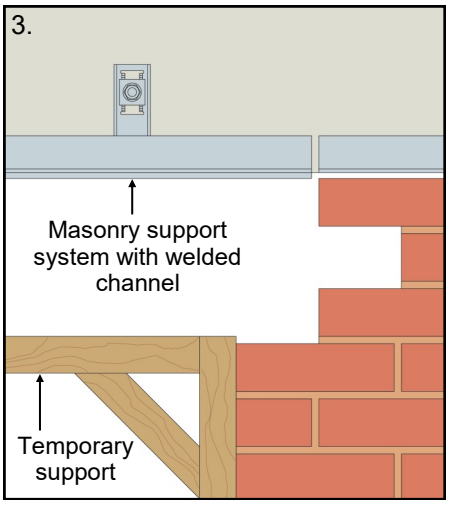


1. Build brickwork up to support angle level on each side of the opening, ensuring that the top three jamb bricks on one side of the opening are left out to allow the installation of the last soffit brick.



2. Install masonry support system in accordance with Ancon installation guidance and drawings. The Hanger Tie system uses a support angle with a channel, normally 36/8, welded to the underside.

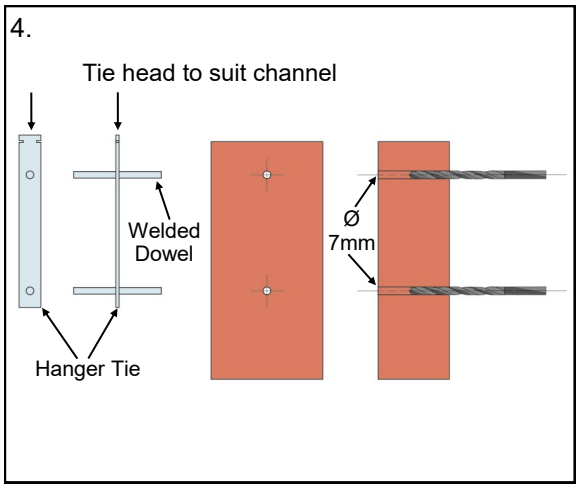
3. Install temporary support underneath the masonry support angle to the set distance of the soffit.

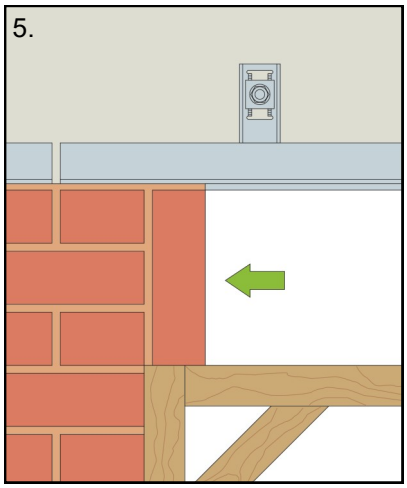


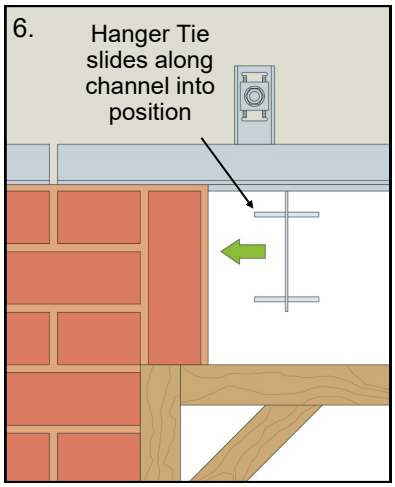
4. Offer up one brick and Hanger Tie to mark out dowel positions on the brick and remove. Drill two 7mm diameter holes through each brick at the dowel positions.

5. Install first soffit brick on to former, ensuring that the vertical joint to the adjacent brick panel is fully filled with type M12 (or equivalent) mortar.

6. Insert Hanger Tie into the channel by turning head through 90º and slide the tie along the channel, pressing it into fresh mortar. Once in position, cover Tie with more fresh mortar to create minimum 10mm vertical joint. Ensure the void between the underside of the support angle and the top of the hung brick is tightly packed with mortar.



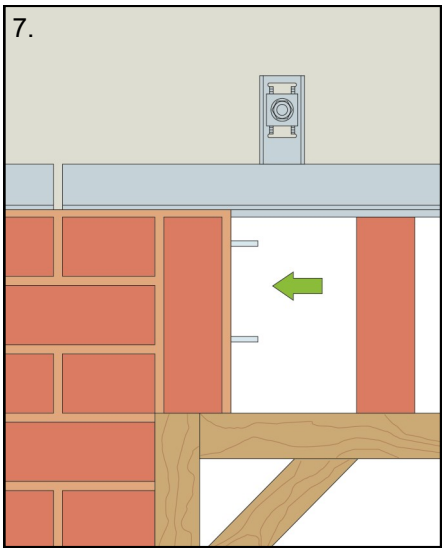




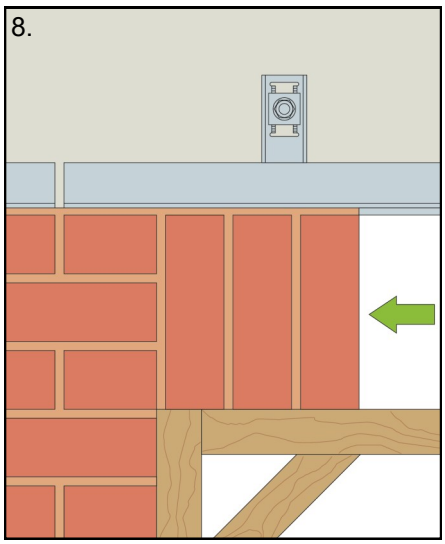
Installation Guide

HANGING BRICKWORK-
HANGER TIE SYSTEM FOR SOLID BRICKS

Installation Procedure



7. Push the next brick onto the dowelled Hanger Tie.

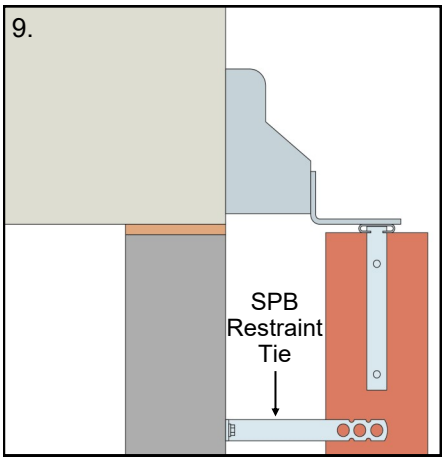


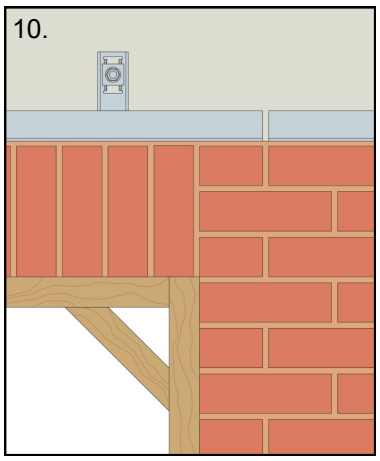
8. Cover the side of the brick with fresh mortar and position next brick.

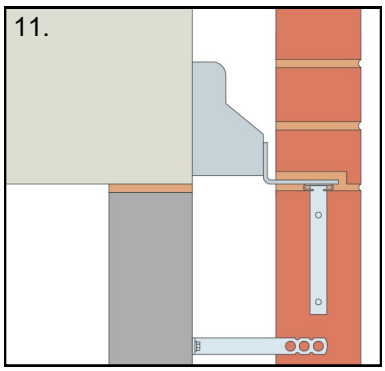
9. Repeat steps 6-8 until all soffit bricks are installed. Install SPB restraint ties as work progresses, typically at 450mm horizontal centres, ensuring that each tie is completely covered with mortar.

10. Install final jamb bricks, filling each joint with fresh mortar.

11. Once mortar has achieved design strength, temporary support may be removed and brickwork may be pointed as necessary. (Check with your Structural Engineer if unsure).







© Ancon Ltd, 2018 While Ancon ensures that its support system will carry the required load and is fully committed to working closely with all parties in order to achieve successful suspended brickwork, the responsibility for the integrity of the overall design rests with the designer of the masonry feature. 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. Ancon Ltd 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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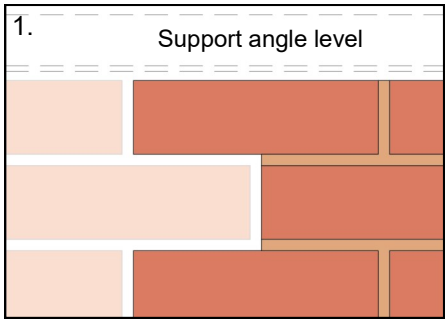
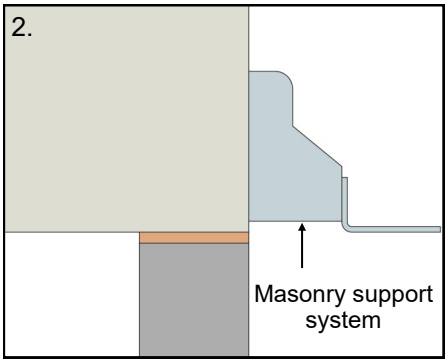
INSTALLATION GUIDE

HANGING BRICKWORK-STIRRUPS AND STITCHING RODS SYSTEM FOR CORED BRICKS

INSTALLATION PROCEDURE

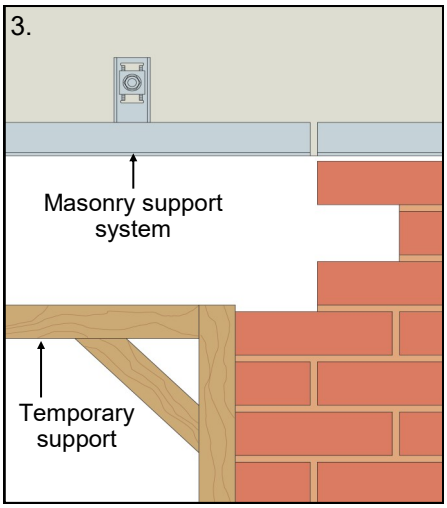


1. Build brickwork up to support angle level on each side of the opening, ensuring that the top three jamb bricks on one side of the opening are left out to allow the installation of the last soffit brick.



2. Install masonry support system in accordance with Ancon installation guidance and drawings.

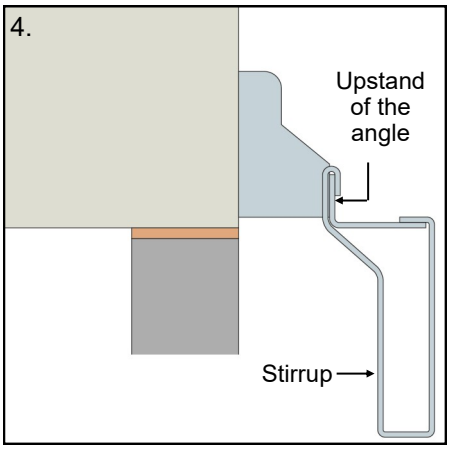
3. Install temporary support underneath the support angle on the line of the new soffit.

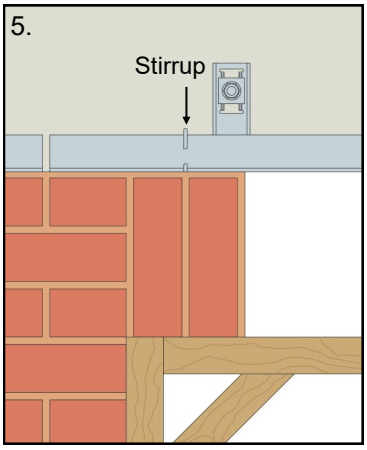


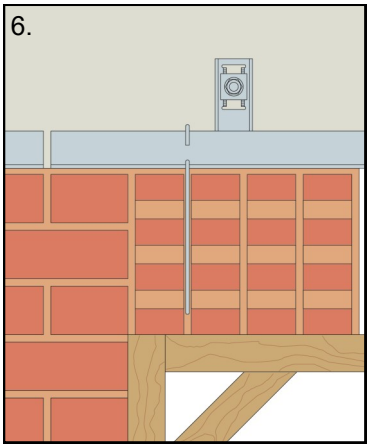
4. Clip the first stirrup onto the support angle. This should be vertical and hung from the upstand of the angle.

5. Offer a brick either side of the stirrup, filling the joint completely with type M12 (or equivalent) fresh mortar. Ensure the void between the underside of the support angle and the top of the hung brick is tightly packed with mortar.

6. Fill the cores of the bricks completely and lay another two bricks adjacent to these, filling each joint with type M12 (or equivalent) fresh mortar.

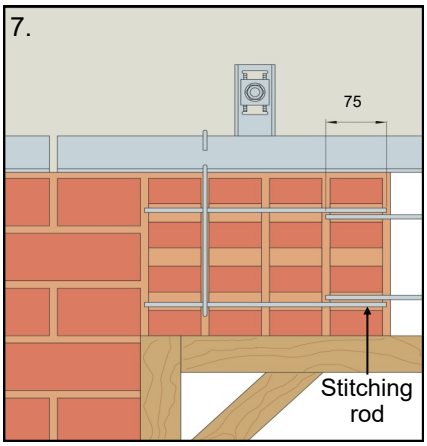






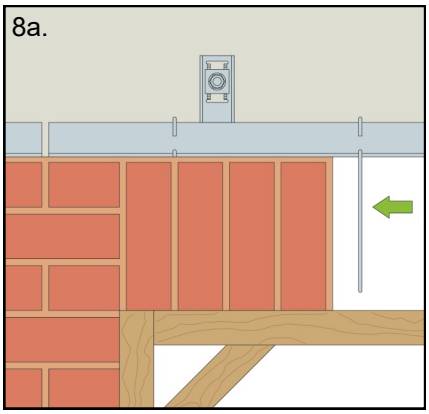
Installation Guide
HANGING BRICKWORK-STIRRUPS AND STITCHING RODS SYSTEM FOR CORED BRICKS

Installation Procedure



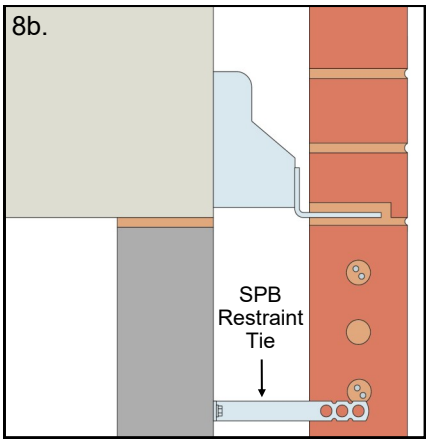
7. 300mm long stitching rods should then be fed through the brick cores as shown, allowing for an overlap of approximately 75mm into the cores of the fourth brick.

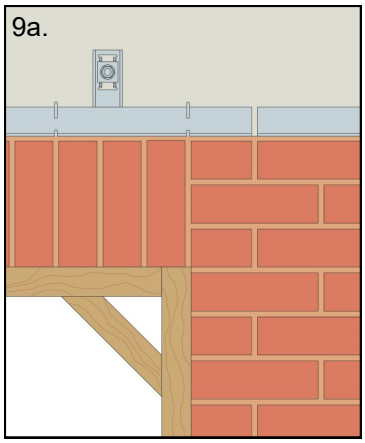
8. Clip the next stirrup onto the support angle, and repeat steps 5-7 until all bricks are installed (8a). Install SPB restraint ties as work progresses, typically 450mm horizontal centres, ensuring that the tie is completely covered with mortar (8b).

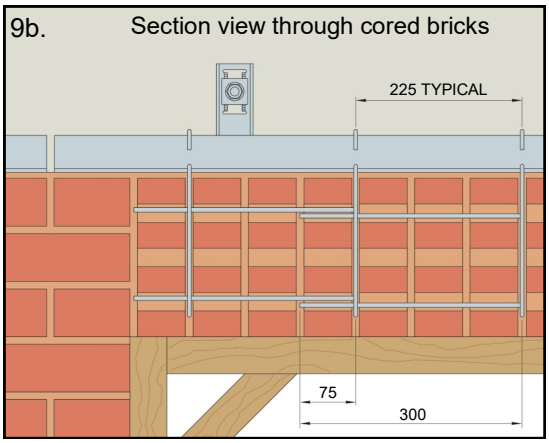


9. Install final jamb bricks, filling each joint with fresh mortar.

10. Once the mortar has achieved its design strength, the temporary support may be removed and the brickwork may be pointed as necessary. (Check with your Structural Engineer if unsure).







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It is Ancon's understanding that a minimum mortar class of M12 is used for all joints in a suspended detail. If there are concerns that the colour of this mortar may not match that of the adjacent brickwork, then it may be possible to either leave the mortar 10-15mm back from the face or to rake out the Class M12 mortar after striking the temporary support, and then re-point with normal mortar.
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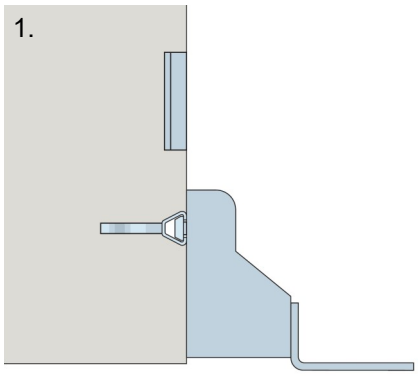
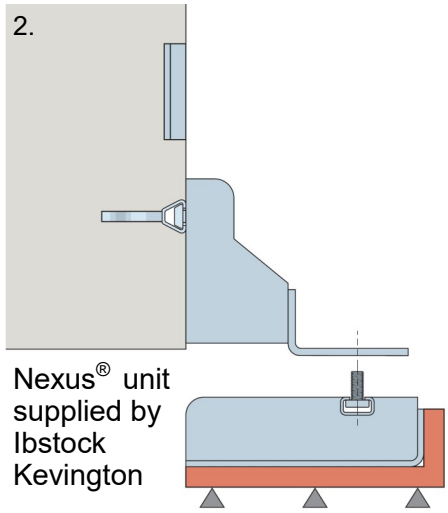
INSTALLATION GUIDE
NEXUS® - BRICK FACED SOFFIT SYSTEM

Due to a change in the Building Regulations, use of Nexus brick-faced soffits and lintels is limited to a maximum building height of 18 metres. This change affects residential construction projects that start on site after 21st February 2019.

INSTALLATION PROCEDURE



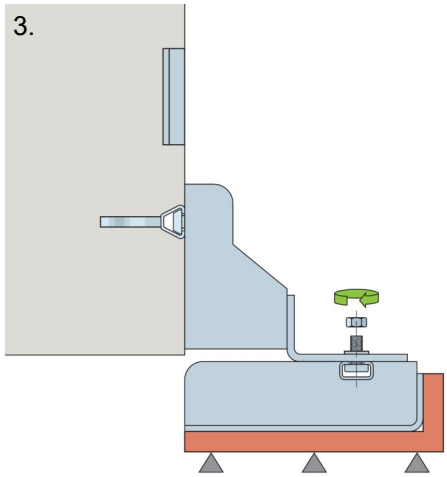
1. Install MDC Nexus® masonry support system in line with Ancon MDC Masonry Support Systems Installation Guide to the point where the fixing bolts are fully torqued.



Nexus® unit supplied by Ibstock Kevington

2. Place the Nexus® soffit unit's T-head bolts in the 28/15 channel to align with the slots in the angle and lift the soffit unit to the underside of the masonry support angle.

The soffit unit should continue to be supported through steps 3 and 4.

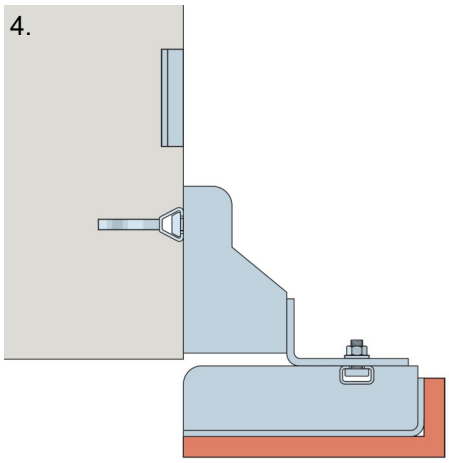


3. Add washer and nut to bolts and finger tighten onto angle. Ensure the T-head bolt is fully turned and engaged in the channel.

If the angle is correctly levelled there should be no need to add shims between the soffit unit and the angle. If however shimming is required then they should be added now. Horseshoe shims must 'surround' the bolt and extend for the full contact area between soffit unit and angle. They must **NOT** be placed in any other location other than around the bolt as this will lead to deformation of the angle when the bolts are torqued.

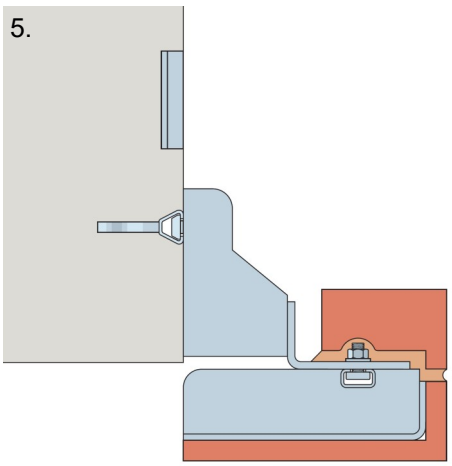
Note: The bolt should have a minimum of two threads visible above the nut, if shimming has reduced this clearance, longer bolts will be required.

INSTALLATION PROCEDURE



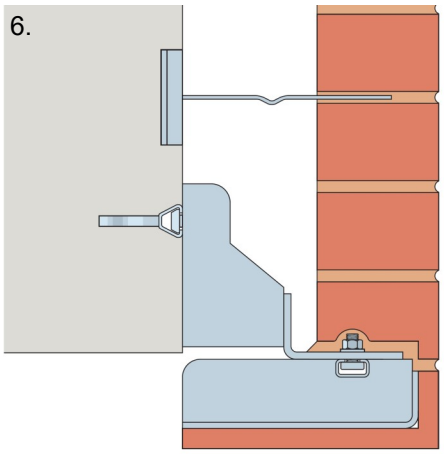
4. Once satisfied with the line and level of the soffit unit, the bolts should be torqued to 20Nm.

The support to the soffit unit can now be removed.



5. Brickwork should then continue on the masonry support system in line with normal bricklaying practice and the Ancon MDC Masonry Support Systems Installation Guide.

*Note: The movement joint in soffit hung details is below the soffit unit. Compressible material should be placed below the soffit unit and **NOT** between the angle and soffit unit.*



6. Point soffit unit to match main brickwork.

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While Ancon ensures that its support system will carry the required load and is fully committed to working closely with all parties in order to achieve successful suspended brickwork, the responsibility for the integrity of the overall design rests with the designer of the masonry feature. 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. Ancon Ltd 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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INSTALLATION GUIDE
COMBIDECK

ANCON COMBIDECK (FIG. 1)

Ancon CombiDeck has been developed for use with the permanent metal deck shuttering of steel-framed structures to both retain concrete and provide a fixing for a masonry support systems; it features an integral channel section that accepts 'T' Head Bolts. It is manufactured in standard three metre lengths in a height to suit the floor thickness.

CombiDeck should only be used with Ancon bolts and Ancon masonry support systems, and should be fixed in accordance with the recommendations provided in this guide.

SAFETY PRECAUTIONS

Ancon steel products are produced from sheared plate. As with all such industrial fabrications, these may have sharp edges. **Suitable personal protective equipment should be worn at all times during handling and installation.**

STORAGE AND CARE INSTRUCTIONS

Ancon CombiDeck performs a structural function. It is very important that the outside edge remains vertical.

Care must be taken when handling the CombiDeck to avoid deformation and damage. Bundles should be stored clear from the ground on suitable supports, to avoid contamination and damage.

CombiDeck has a special stiffener incorporated into its design to help alleviate any local distortion, however any damage should be avoided as this will affect the channel line and level, and ultimately the stability of the external leaf of masonry.

VERTICAL ALIGNMENT (FIG. 2)

CombiDeck should be fixed ensuring the vertical leg which incorporates the cast-in channel is within ±1°. The consequence of a non-vertical leg is reflected when the support system is fixed. The example shown indicates the amplification of movement for a typical downstand system.

BUTT JOINTS (FIG. 3)

Lengths of CombiDeck should be butted against each other and the joints taped to prevent concrete leakage. (Tape: Aluminium foil tape 50mm wide, 'Alifoil').

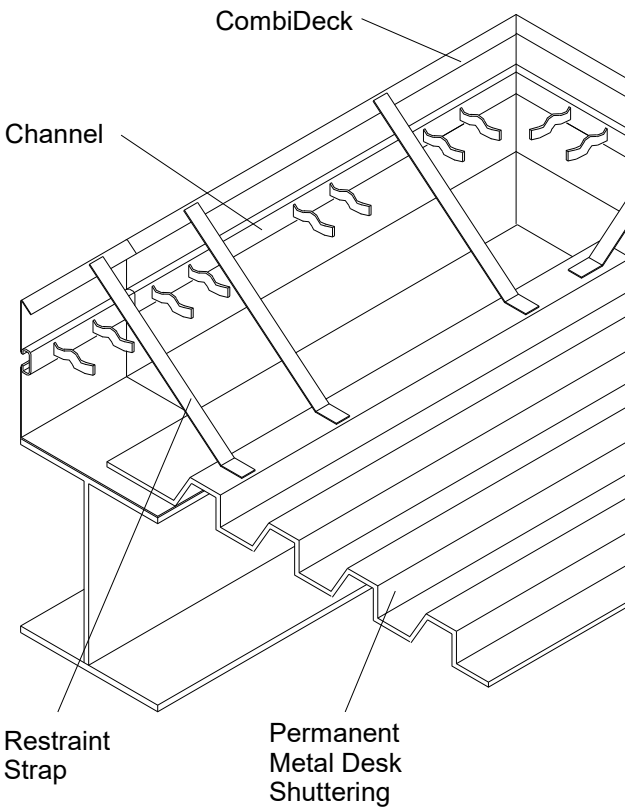

FIG. 1

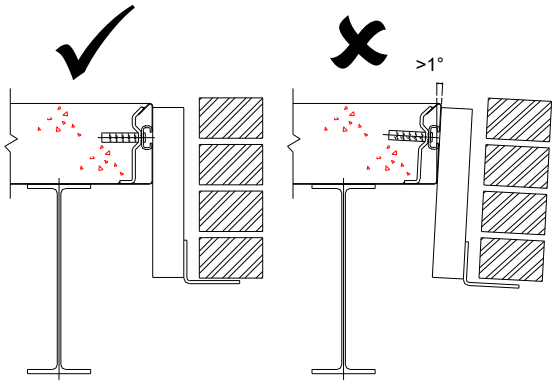

FIG. 2

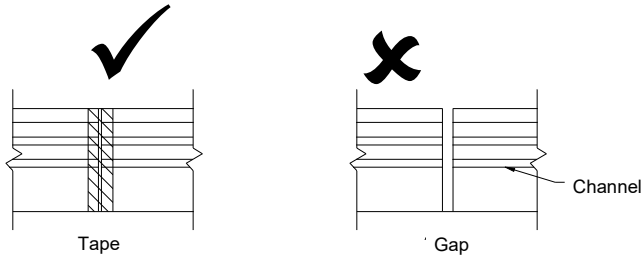

FIG. 3

EDGE DETAILS & LOCAL REINFORCEMENT (FIG. 4)

A minimum of 125mm should be left between the outer edge of the CombiDeck and the metal deck to allow sufficient space for the channel anchors and the local reinforcement. Where the decking is at 90° to the CombiDeck, the open troughs must be filled to retain the wet concrete.

CombiDeck requires no special reinforcement, providing that the slab provides at least the equivalent of H8 Shape 13 bars at a maximum of 150mm centres.

When positioning the CombiDeck it is essential that the top longitudinal reinforcement does not rest or interfere with the channel lugs. Should this occur the top edge distribution bar should be moved slightly away from the slab edge to give sufficient clearance.

OVERHANG (FIG. 5)

The outer edge of the CombiDeck can extend un-propped beyond the steelwork up to a maximum distance of 100mm. If a greater distance is required, both the metal deck and the CombiDeck will need to be propped.

FIXING DETAILS (FIGS. 6, 7, 8)

The bottom leg of the CombiDeck should be fixed to steelwork / metal deck at 300mm maximum centres.

Straps are supplied to restrain the top edge of the CombiDeck. These should be fixed within 100mm of a joint or end and at centres not exceeding 450mm thereafter. The straps are supplied in 1.5 metre lengths for cutting and bending on site.

Stainless steel and carbon steel self-drill self-tap screws are available from Ancon.

CUTTING ON SITE (FIG. 9)

CombiDeck can be cut to suit on site. As with all cast-in channels, it is important to ensure that there is an anchor within 50mm from the end of the channel. A distance greater than 50mm will reduce the load carrying capacity of the channel.

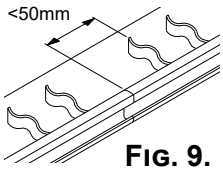

FIG. 9.

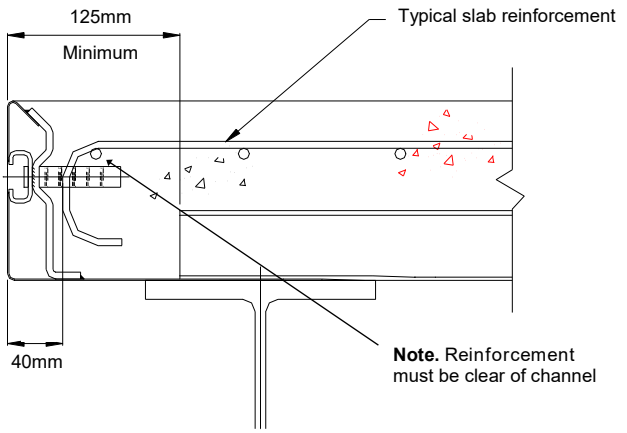

FIG. 4.

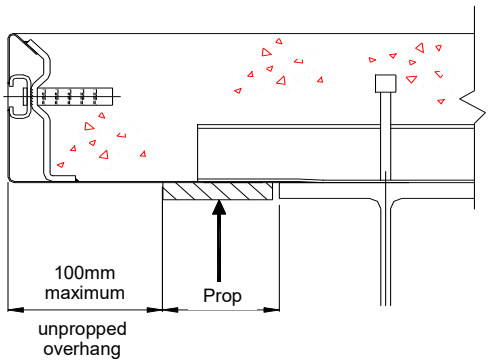

FIG. 5.

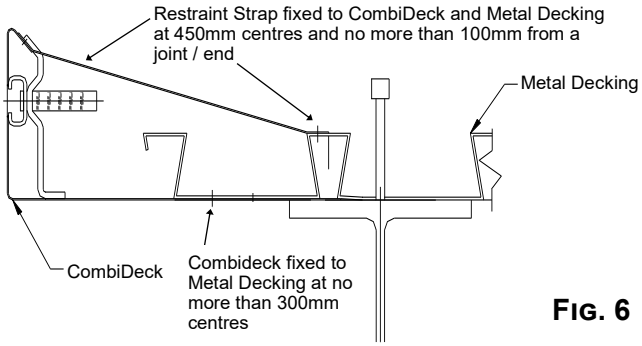

FIG. 6

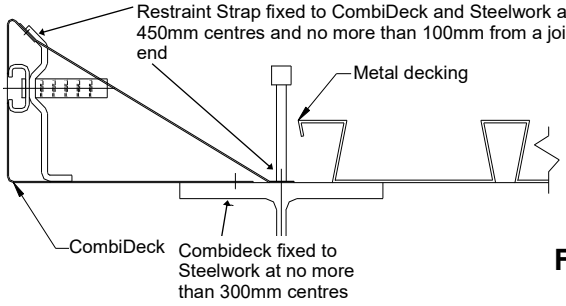

FIG. 7

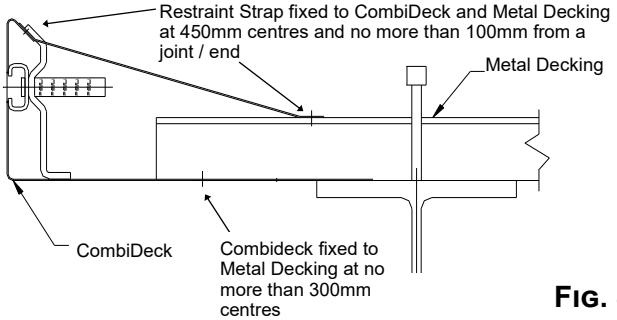

FIG. 8

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INSTALLATION GUIDE

STAINLESS STEEL LINTELS

LINTELS

Ancon manufactures a range of lintels in stainless steel. The Housing and Unilintel ranges are designed to suit the light to medium duty loading conditions found in the majority of residential and commercial buildings.

INSTALLATION

The lintel should be firmly bedded in mortar with at least 150mm end bearing onto a full brick/block. **Please consult Ancon's Technical Team when using reduced bearings for revised capacities.**

The front and back of the lintel must be level before proceeding and a separate damp proof course incorporated if required.

The inner and outer leaves supported by the lintel should be raised together to avoid twisting the lintel; blocks should continue for the full length of the inner flange. Although the lintels have a drip edge on the external flange to shed moisture, good practice should be followed at the junction of the window head and lintel by sealing with a suitable mastic, thereby ensuring that driving rain does not penetrate. Wall ties should be provided at a recommended maximum horizontal spacing of 450mm within 300mm above the lintel support.

Do not cut lintels to length or modify them in any way without permission. Do not lay more than 1.5 metres of wall above a lintel in any 24 hour period in accordance with BS 5628 : Part 3 : 2005.

Long spanning lintels and all single leaf lintels will require propping during installation to limit deflections. The bricks should be laid tight to the back of the angle and tied to the backing structure/inner leaf within 450mm of the lintel soffit. At least 600mm of brickwork should be raised above the lintel soffit. The brickwork should be left to gain sufficient strength prior to removal of the props. If in doubt please contact Ancon technical staff.

SAFETY PRECAUTIONS

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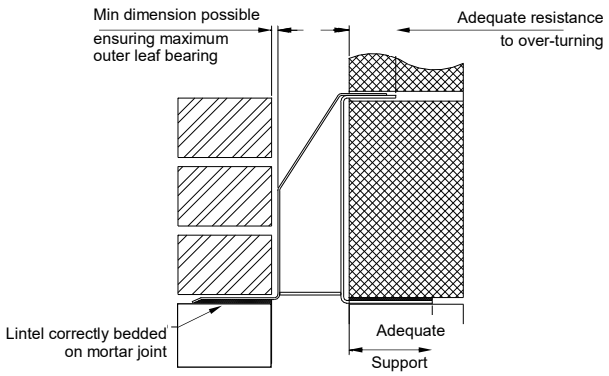
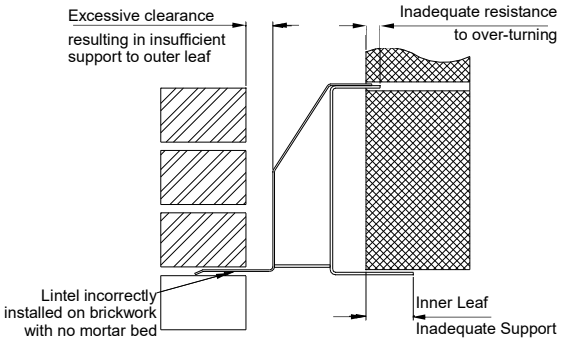
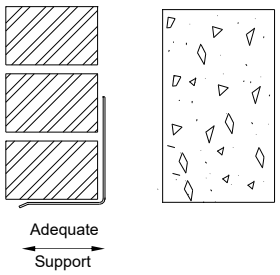
✓ CORRECT INSTALLATION



✗ INCORRECT INSTALLATION



SINGLE LEAF LINTEL



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INSTALLATION GUIDE
WINDPOSTS

ANCON WINDPOSTS

Panels of masonry with openings or very large masonry panels can be difficult to design. Ancon Windposts are designed to span vertically between floors to provide additional lateral support for panels of masonry.

TOP & BOTTOM CONNECTIONS

Top and bottom connections are designed with slotted holes to allow adjustment. Where cast-in channels are used parallel to the slab edge, a serrated pad and washer must be provided. Where expansion bolts are used, round holes or slots parallel to the slab edge will suffice. **The top connection should also have a vertical slot or slots (no serrations) to permit movement of the frame.**

Connections to the structural frame are determined prior to Manufacture/Supply, therefore the following rules should be followed.

1. Only use the fixings supplied, as these are integral to the design.
2. Use all normal/serrated washers provided, and tighten nuts to specified tightening torques. (see Installation Guide – Bolts)
3. Dimensional positioning of the Windpost should be to either Structural Engineers or Specialist details.
4. Ensure all Windposts are installed vertical in both planes, thus allowing the ties to slide in the slots if expansion/contraction of the frame occurs.

It may be necessary to provide temporary support or a prop to hold the top of the windpost in place during construction, if the top connection of the windpost cannot be fixed to the structure.

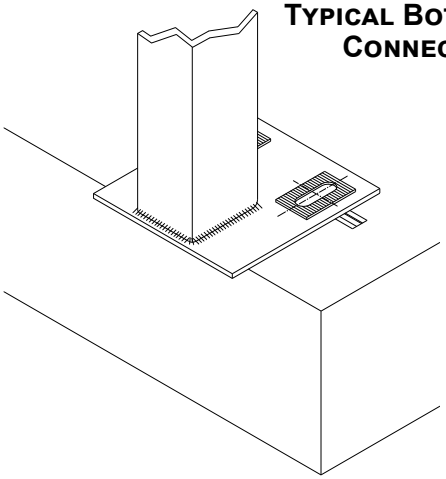
TIE INSTALLATION

Wall ties should be fitted in each slot and have a minimum embedment of 50mm into each leaf. Ancon suggest tie lengths which achieve a recommended embedment of between 62.5mm and 75mm, allowing for tolerance for cavity variations.

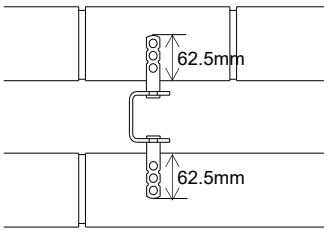
ANCON WP2/WP4 INSTALLATION DETAILS

The design of Ancon WP2/WP4 Windposts assumes full restraint to the longer leg of the post located within the vertical masonry joint. To prevent lateral movement of the post within this joint and ensure the windpost performs to its full capacity, it is essential that this joint is tightly packed with mortar.

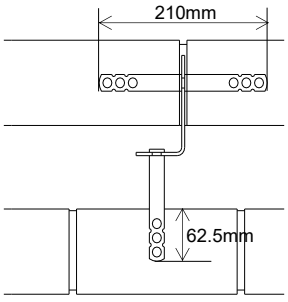
TYPICAL BOTTOM CONNECTION



TIE EMBEDMENT (WP1/WP3)



TIE EMBEDMENT (WP2/WP4)



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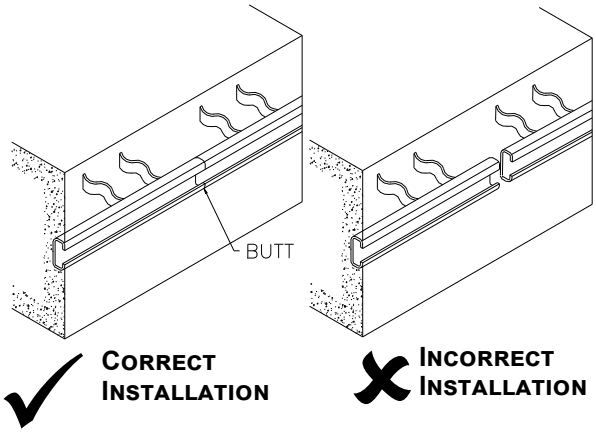
Ancon®

ANCON CAST-IN CHANNEL

Ancon cast-in channels are normally supplied in 3000mm lengths with welded anchors, nail holes, and polystyrene infill. Cast-in channels provide a tolerance when fixing to concrete. Incorrect installation is likely to result in expensive remedial work which may result in bolted fixings.

All channels are supplied with nail holes to aid the fixing of the channel to the formwork. All such holes need to be utilised (except with Omega Channel), to prevent excessive ingress of concrete fines between the formwork during casting. Channels can also be fixed to the formwork using 'T' head bolts, nuts and washers.

30/20 Channel is supplied with plastic end caps. They should be removed where channels are butted together. End Caps should always be in place where channels are not butted.



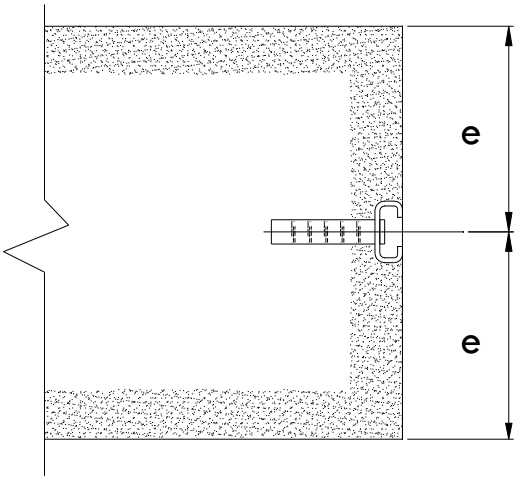
CORRECT INSTALLATION

INCORRECT INSTALLATION

MINIMUM EDGE DISTANCE

Care should be taken to ensure that the dimension from the centre of the channel to the edge of the concrete is not less than the minimum edge distance shown below. The channel must be lined and levelled correctly. In every situation, care must be taken to ensure a good fit is obtained between the face of the channel and the formwork.

Channel	Min. Edge Distance 'e'
54/33	160 mm
49/30	150 mm
41/27	100 mm
40/25	100 mm
30/20	75 mm
38/17	75 mm
28/15	50 mm
21/18 (Omega)	50 mm



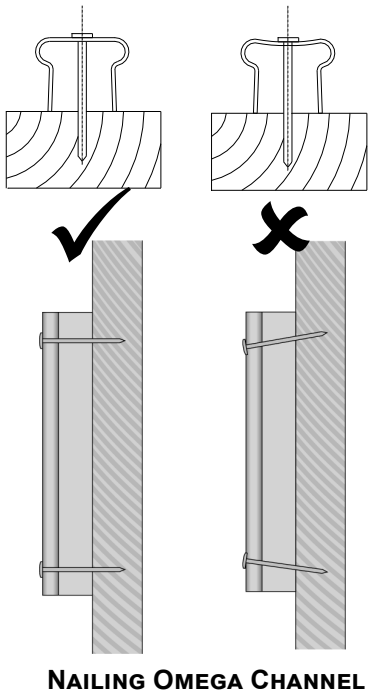
MINIMUM EDGE DISTANCE

INSTALLATION OF 21/18 OMEGA CHANNEL

Ancon 21/18 is a shallow self-anchoring channel, and care must be taken during installation. The channel is filled with expanded polystyrene to help prevent the ingress of concrete. Nail holes to allow fixing to timber formwork are positioned at 150mm centres in 3000mm channel and 100mm lengths have two nail holes.

Nails 30mm long with a plain shank should be installed perpendicular to the channel to ensure the easy removal of the timber formwork and the retention of the channel in the concrete. 100mm long Omega is fixed with two nails. 3000mm long Omega is nailed at each end and then at 300mm centres.

The concrete should be fully compacted around the channel to eliminate any voids. Sufficient time must be allowed for the concrete to attain enough strength to retain the channel before striking the formwork. In very cold weather it may be necessary to allow extra time.



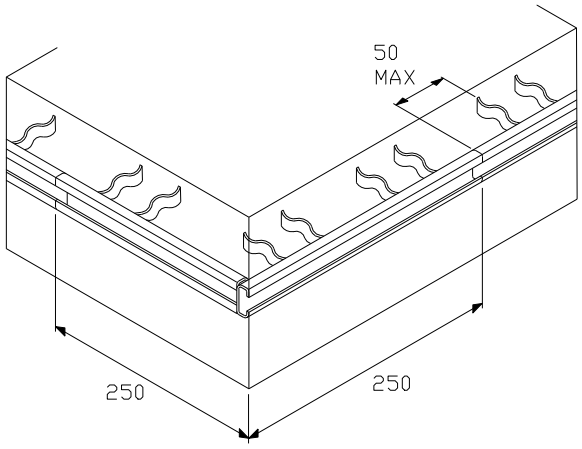
NAILING OMEGA CHANNEL

WELDED FABRICATIONS

Where channels with welded anchors are cut on site, it is important to ensure that there is an anchor within 50mm from the end of the channel. A distance greater than 50mm will reduce the load carrying capacity of the channel.

Where horizontal cast-in channel is used in conjunction with Brickwork Support Systems, all external corners must incorporate a Welded Corner Fabrication. Release oil must not be applied to either the channel or the channel anchors.

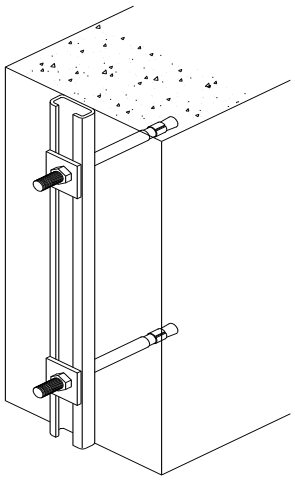
When the concrete is poured, care should be taken to ensure that the concrete is fully compacted around the back of the channel and especially adjacent to anchors. After the concrete has cured and the formwork removed, the formwork nails should either be cut off or bent away from any tie or T head bolt.



WELDED CORNER FABRICATION

CHANNELS FOR SURFACE FIXING (FACE FIXING)

The 38/17 and 28/15 channels are normally supplied plain backed for surface fixing to either concrete or steelwork. When bolting channel to concrete or steelwork it is important to utilise all fixing holes, incorporating the square washer provided and ensuring its correct orientation to achieve the allowable loads. (see drawing opposite) . Bolt and washer specifications are shown below.



FACE FIXED CHANNEL

CHANNEL	BOLT DIA.	WASHER
38 x 17	M10	30 x 30 x 3
28 x 15	M8	25 x 25 x 3

SAFETY PRECAUTIONS

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Installation Guide
36/8 WALL EXTENSION SYSTEM

The Ancon 36/8 Wall Extension System can be supplied with either SP36 ties or, where some longitudinal movement must be accommodated at the joint, PP36 ties complete with debonding sleeves.

The system is available as a kit comprising ten wall ties, a length of 36/8 channel 2400mm long and ten plugs and fixing screws. It has a design resistance of 1.6kN per metre.

The channel can be supplied in lengths of up to 3.4 metres with each length having a series of holes to allow fixing to the existing wall. Holes are given at 150mm centres and fixings should be installed at 300mm maximum vertical centres.

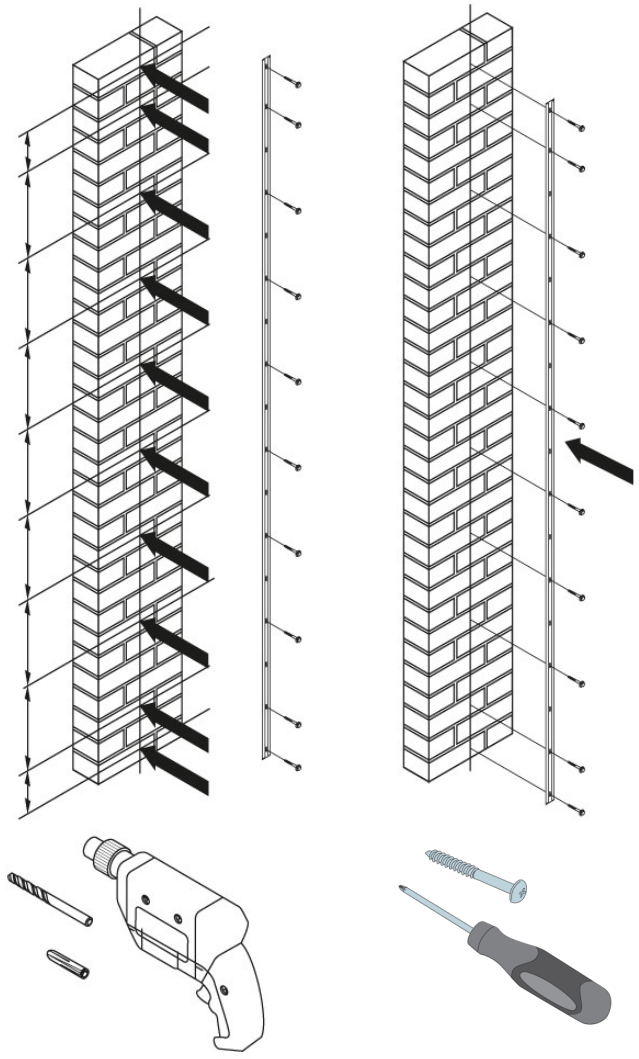
The Ancon 36/8 wall extension system is supplied with SX8 Nylon plugs and stainless steel pozi head screws. This fixing requires an 8mm diameter hole and is suitable for use in various types of block as well as concrete.

Prior to Installation

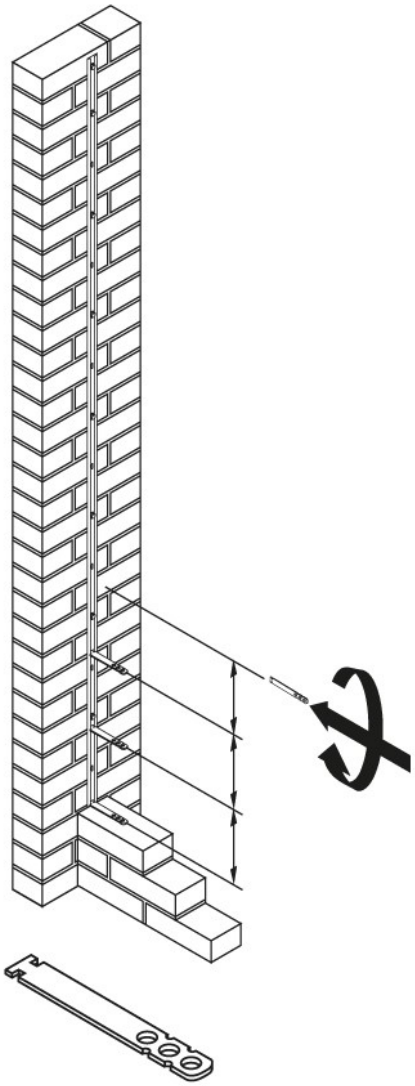
Remove any render, debris etc. from the existing wall/concrete where the new wall will be joined.

Installation

- Offer up the channel section.
- On the existing wall, mark the position of the ten fixing holes to be used so that the channel will be central to the new masonry leaf and wall ties can be positioned in the channel at 225mm vertical centres for the full height of the wall.
- Holes are located at 150mm centres along the channel. Fixings should be installed at a maximum of 300mm vertical centres, ensuring there are fixings through the first and last hole of each channel section.
- Drill 8mm diameter holes, 50mm deep, and install wall plugs.
- Position channel and loosely fix screws through channel in to the wall plugs.
- Fully tighten screws, in any order, when all channel lengths are in position.



- Insert wall ties by turning 90˚ clockwise in the channel and build into the bed joints of the new wall, ensuring they are surrounded by mortar (225mm vertical centres are recommended).



NOTES

- For cavity walls: Each leaf requires a separate starter system.
- For external walls: A 10mm wide weather seal should be constructed between the existing brickwork and the new wall using either a flexible mastic sealant or a compressible sealing strip. Your local Building Control Officer should be consulted regarding further weatherproofing which may be required in accordance with Building Regulations.
- Wall heights above 2400mm: Where the wall height requires multiple channel sections, these should abut one another and be installed in the same way as above.

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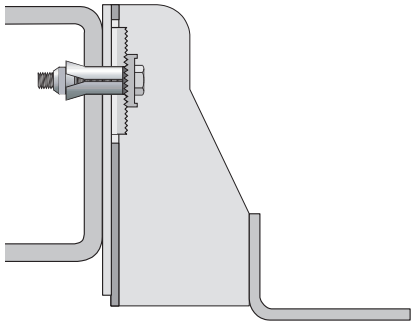
INSTALLATION GUIDE

ANCON STEELGRIP



Ancon Steelgrip is designed for fixing Ancon masonry support systems to square or rectangular hollow steel sections. It can also be used with other steel sections where access is only available from the front.

It is a high performance fixing available in one size (M12).

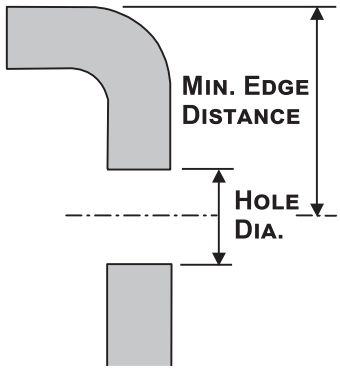
Steelgrip includes a serrated washer, which matches the serrations at the back of the Ancon bracket. With the bracket in position, Steelgrip is inserted through the vertical slot in the bracket and into the pre-drilled hole in the Hollow Section. It is then simply tightened to the correct torque.

PERFORMANCE

The design resistances shown in the table below are static loads in either tension or shear.

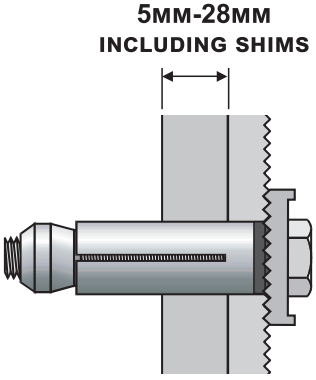
INSTALLATION

1. Drill a hole in the steel member. See table below for hole diameter and minimum edge distance.

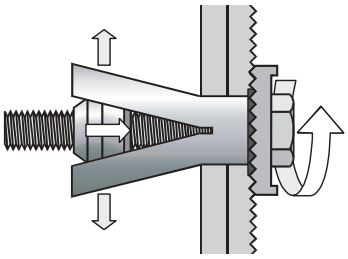


2. With the bracket in place, insert the Steelgrip through the vertical slot ensuring that the serrations on the washer are horizontal and will mesh with the serrations at the back of the bracket.

3. Adjust the height of the bracket, and if necessary insert shims behind the bracket up to a maximum thickness of 16mm. An isolation membrane will normally be positioned between the face of the steel edge member and the stainless steel bracket/ shim.



4. Tighten the Steelgrip to required torque using a calibrated torque wrench. See table below for tightening torque.



TECHNICAL DATA	M12
Resistance Tension	20.3kN
Resistance Shear	13.5kN
Hole Diameter	20mm
Min. Edge Distance	28mm
Tightening Torque	80Nm

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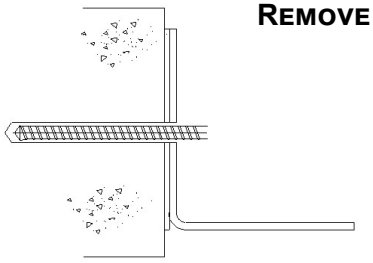
INSTALLATION GUIDE
SINGLE EXPANSION BOLTS (FBN II)

ETA-07/0211
ETAG 001-2
Option 7 for non-cracked concrete

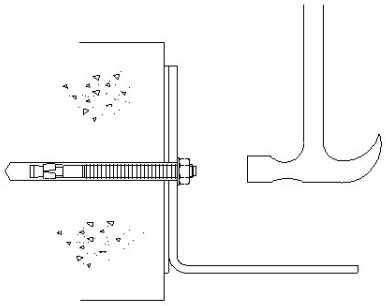
DRILL HOLE & REMOVE DEBRIS

Drill the hole using a hammer drill, through the pre-drilled hole in the fixture, into the concrete. This hole should be drilled perpendicular to the substrate surface and to the correct diameter and depth. All dust and loose material should be removed from the hole using a wire brush or blow pump.



INSERT BOLT

Lightly tap the throughbolt through the fixture into the hole with a hammer, until the fixing depth is reached.



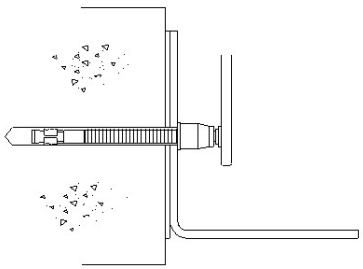
Tighten to the recommended torque.

BEFORE INSTALLATION

The following checks must be carried out prior to installation of Single Expansion Bolts.

1. The appropriate length and diameter drill bit is used.
2. The correct edge distance and spacing are used in accordance with the design requirements.
3. The anchor/fixing is the correct size.
4. The correct setting tools are used.

TIGHTEN BOLT



Single Expansion Bolts

Bolt Reference	FBNII 6/10	FBNII 8/10	FBNII 10/20	FBNII 10/50	FBNII 12/20	FBNII 12/50	FBNII 16/25	FBNII 16/50
Thread Size	M6	M8	M10	M10	M12	M12	M16	M16
Overall Length (mm)	55	71	96	126	116	146	145	170
Hole Dia. in Concrete (mm)	6	8	10	10	12	12	16	16
Drill Depth* (mm)	50	66	88	118	105	135	129	154
Hole Dia. in Fixture (mm)	6.5	9	11	11	13	13	17	17
Min. Embedment (mm)	30	40	50	50	65	65	80	80
Width Across Nut (mm)	10	13	17	17	19	19	24	24
Tightening Torque (Nm)	4	10	20	20	35	35	80	80
Max. Fixing Thickness (mm)	10	10	20	50	20	50	25	50

**Minimum Drill Depth for through bolt installation at maximum embedment.*

Note: For use in non-cracked concrete C20/25 to C50/60.

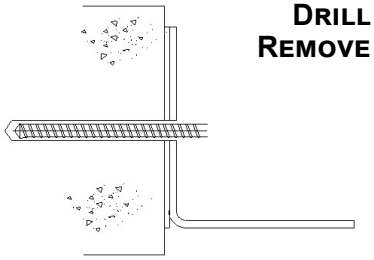
Ancon®

INSTALLATION GUIDE

HIGH PERFORMANCE BOLTS (FAZ II)

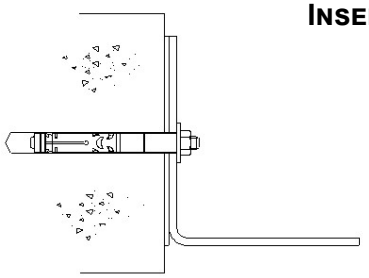
ETA-05/0069
ETAG 001-2
Option 1 for cracked concrete

Drill the hole using a hammer drill, through the pre-drilled hole in the fixture, into the concrete. This hole should be drilled perpendicular to the substrate surface and to the correct diameter and depth. All dust and loose material should be removed from the hole using a wire brush or blow pump.



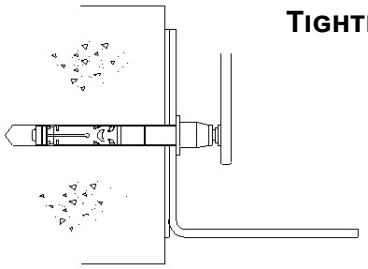
DRILL HOLE & REMOVE DEBRIS

Insert the bolt through the component to be fixed and into the concrete. Add any packing shims that maybe required.



INSERT BOLT

Tighten to the recommended torque.



TIGHTEN BOLT

BEFORE INSTALLATION

The following checks must be carried out prior to installation of High Performance Bolts.

1. The appropriate length and diameter drill bit is used.
2. The correct edge distance and spacing are used in accordance with the design requirements.
3. The anchor/fixing is the correct size.
4. The correct setting tools are used.

High Performance Expansion Bolts

Bolt Reference	FAZII 8/10	FAZII 10/10	FAZII 10/30	FAZII 12/30	FAZII 12/50	FAZII 16/25	FAZII 16/50
Thread Size	M8	M10	M10	M12	M12	M16	M16
Overall Length (mm)	75	95	115	130	150	148	173
Hole Dia in Concrete (mm)	8	10	10	12	12	16	16
Drill Depth* (mm)	65	85	105	120	140	135	160
Hole Dia in Fixture (mm)	9	11	11	13	13	17	17
Min. Embedment (mm)	45	60	60	70	70	85	85
Width Across Nut (mm)	13	17	17	19	19	24	24
Tightening Torque (Nm)	20	45	45	60	60	110	110
Max. Fixing Thickness (mm)	10	10	30	30	50	25	50

**Minimum Drill Depth for through bolt installation at maximum embedment.*

Note: For use in cracked and non-cracked concrete C20/25 to C50/60.

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June 2019

INSTALLATION GUIDE
CAPSULE (BONDED) ANCHORS TYPE FCS RG

ETA-16/0340
ETAG 001-5
Option 1 for cracked concrete

NOTES

Anchor installation to be carried out under the supervision of the person responsible for technical matters on site.

Use of the anchor only as supplied by Ancon without exchange of any components.

Checks must be carried out prior to the installation of the anchor to ensure the placed concrete matches the design parameters i.e. concrete strength, cracked/non-cracked.

Checks must be carried out to ensure the concrete is well compacted and free from significant voids.

In the case of aborted holes, these must be filled with an appropriate non-shrink grout of equal or greater compressive strength to the surrounding concrete.

Drilling is to be by **hammer drill only** – Diamond drilling is not permitted.

Exposed threads to be protected by the use of tape.

Table 1

Anchor Reference	FCS RG M8 x 110	FCS RG M10 x 130	FCS RG M12 x 160	FCS RG M16 x 190	FCS RG M20 x 260
Overall Length (mm)	110	130	160	190	260
Hole Dia. in Concrete (mm)	10	12	14	18	25
Drill Depth* (mm)	80	90	110	125	170
Hole Dia. in Fixture (mm)	9	11	14	18	22
Embedment* (mm)	80	90	110	125	170
Tightening Torque (Nm) T_{inst}	10	20	40	60	120
Max. Fixing Thickness (mm)	10	16	21	32	52

*Typical drill hole and embedment depths

Table 2

Concrete Temperature	Min. Curing Time
-5°C to ± 0ºC	4 hr
≥0°C to + 10ºC	45 mins
≥ + 10°C to + 20ºC	20 mins
≥ + 20°C	10 mins

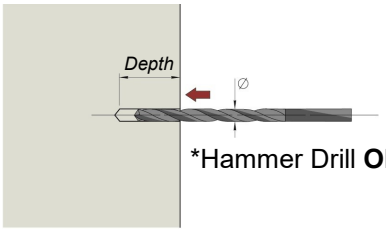
*For wet concrete and flooded holes the curing time must be doubled

INSTALLATION GUIDE
CAPSULE (BONDED) ANCHORS TYPE FCS RG

INSTALLATION PROCEDURE

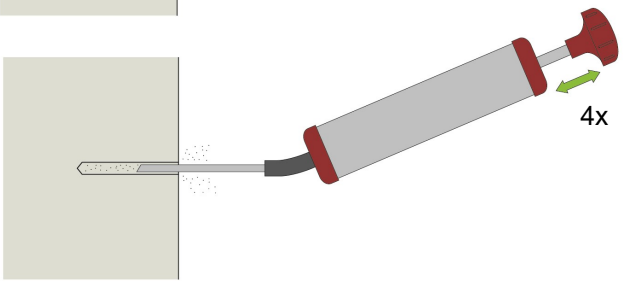
ETA-16/0340
ETAG 001-5
Option 1 for cracked concrete

1. Drill a hole of appropriate diameter and depth. See table 1 for reference.

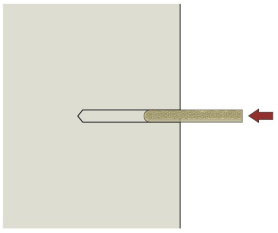


*Hammer Drill **ONLY**

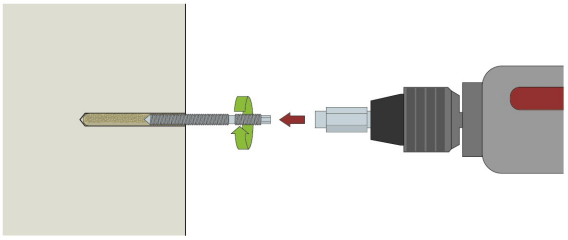
2. Clean hole using a minimum of four times blowing operations with a manual blow out tool.



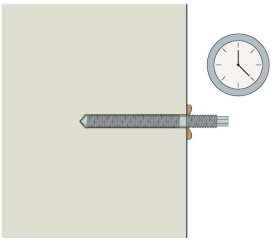
3. Put the mortar capsule RM into the cleaned drill hole.



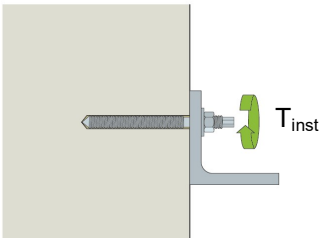
4. Attach the anchor rod to an electric drill and, using impact and rotation, insert into the hole. Switch off immediately when the drill hole base is reached.



5. Do not touch the anchor until the appropriate cure time is reached. See Table 2.



6. Set the fixing with the appropriate torque. See Table 1.



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INSTALLATION GUIDE
INJECTION (BONDED) ANCHORS TYPE FIS VL

ETA-10/0352
ETAG 001-5
Option 1 for cracked concrete

NOTES

Anchor installation to be carried out under the supervision of the person responsible for technical matters on site.

Use of the anchor only as supplied by Ancon without exchange of any components.

Checks must be carried out prior to the installation of the anchor to ensure the placed concrete matches the design parameters i.e. concrete strength, cracked/non-cracked.

Checks must be carried out to ensure the concrete is well compacted and free from significant voids.

In the case of aborted holes, these must be filled with an appropriate non-shrink grout of equal or greater compressive strength to the surrounding concrete.

Drilling is to be by **hammer drill or compressed air drill only** – Diamond drilling is not permitted.

Exposed threads to be protected by the use of tape.

Table 1

Anchor Reference	FIS VL06/ FIS A M6 x 75	FIS VL08/ RG M8 x 110	FIS VL10/ RG M10 x 130	FIS VL12/ RG M12 x 160	FIS VL16/ RG M16 x 190	FIS VL20/ RG M20 x 260
Overall Length (mm)	75	110	130	160	190	260
Hole Dia. in Concrete (mm)	8	10	12	14	18	24
Drill Depth* (mm)	66	90	106	131	127	222
Hole Dia. in Fixture (mm)	7	9	11	14	18	22
Embedment* (mm)	50	80	90	110	125	170
Tightening Torque (Nm) T_{inst}	5	10	20	40	60	120
Max. Fixing Thickness (mm)	16	10	16	21	32	50

*Typical drill hole and embedment depths

Table 2

Concrete Temperature	Min. Curing Time
-5°C to ± 0ºC	24 hr
≥ 0°C to + 5ºC	3 hr
≥ + 5°C to + 10ºC	90 mins
≥ + 10°C to + 20ºC	60 mins
≥ + 20°C to + 30ºC	45 mins
≥ + 30°C to + 40ºC	35 mins

*For wet concrete and flooded holes the curing time must be doubled

System Temperature (Resin)	Processing Time
+5°C	13 mins
+10°C	9 mins
+20ºC	5 mins
+30ºC	4 mins
+40ºC	2 mins

*For wet concrete and flooded holes the processing time must be doubled

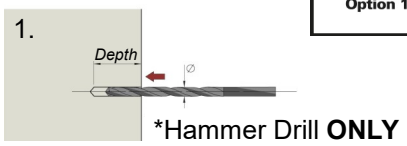
INSTALLATION GUIDE
INJECTION (BONDED) ANCHORS TYPE FIS VL

ETA-10/0352
ETAG 001-5

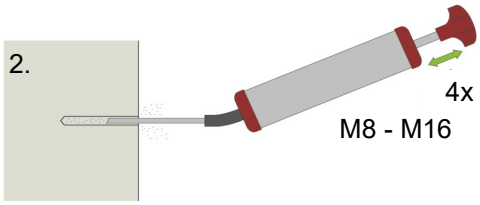
Option 1 for cracked concrete

INSTALLATION PROCEDURE

1. Drill a hole of appropriate diameter and depth. See table 1.

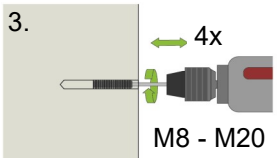


2. For M8 to M16 - Clean hole using a minimum of four times blowing operations with a manual blow out tool. For M20, clean hole using a minimum of four times using oil free pressure air [Pressure > 6bar].

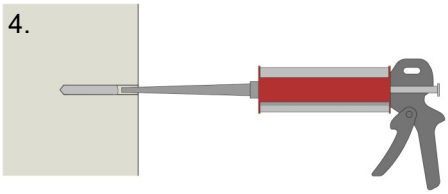


3. Brush the drill hole four times using an adequate steel brush and a drill. For deep holes use an extension. Repeat blowing procedure.

4. Twist off the cartridge sealing cap and fit the mixing cartridge into the appropriate injection resin dispenser gun. Twist on the static mixer [the spiral in the static mixer must be clearly visible]. Note: Extrude approximately 100mm until the resin is a consistent grey in colour. Don't use resin of inconsistent colour.

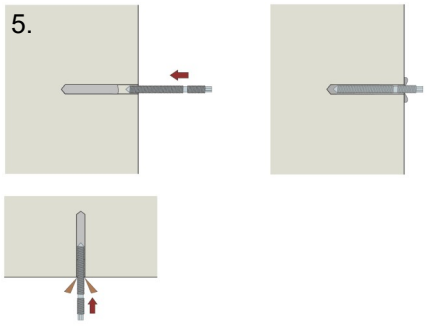


Fill approximately 2/3 of the drill hole with resin. Always begin from the bottom of the hole to eliminate voids. For drill hole depths 150mm or greater, use an extension tube.

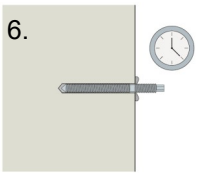


5. Use only clean oil free anchor studs. Mark the anchor stud for the appropriate embedment depth [see Table 1]. Press the anchor rod down to the bottom of the hole, turning it tightly while doing so. After inserting the anchor rod, excess resin must emerge around the anchor element.

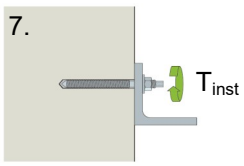
For overhead installation support the anchor rod with wedges. For push-through installation fill the annular gap with resin.



6. Do not touch the anchor until the appropriate cure time is reached [See Table 2].



7. Set the fixing with the appropriate torque [See Table 1].



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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.

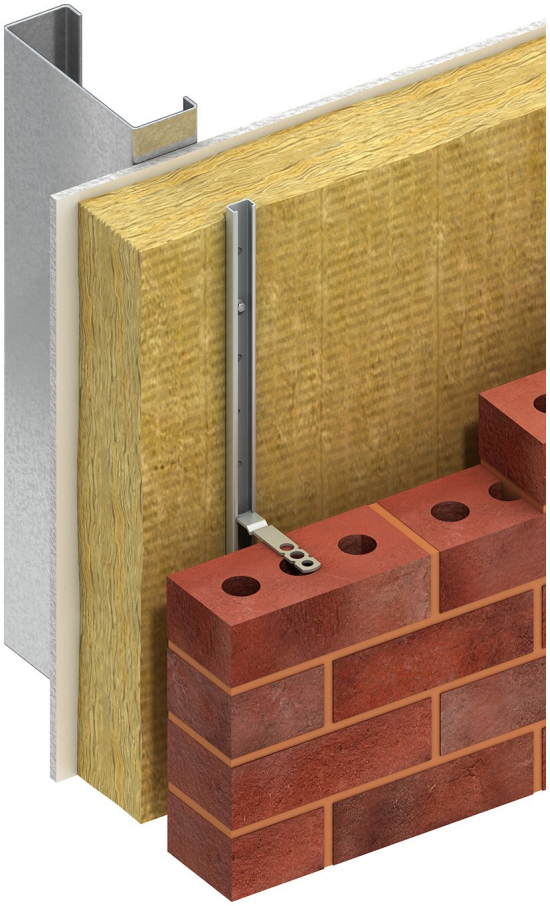
Once the channel is installed, Ancon SD25 wall ties can be positioned at any point along its length and are built into the bed joints of the outer brickwork leaf.

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 that allows installation without pre-drilling. To install the self-drilling self-tapping screws, a variable speed screwdriver fitted with a suitable drive system should be used. They should be fixed using a driver with a speed of around 1800rpm. 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.



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

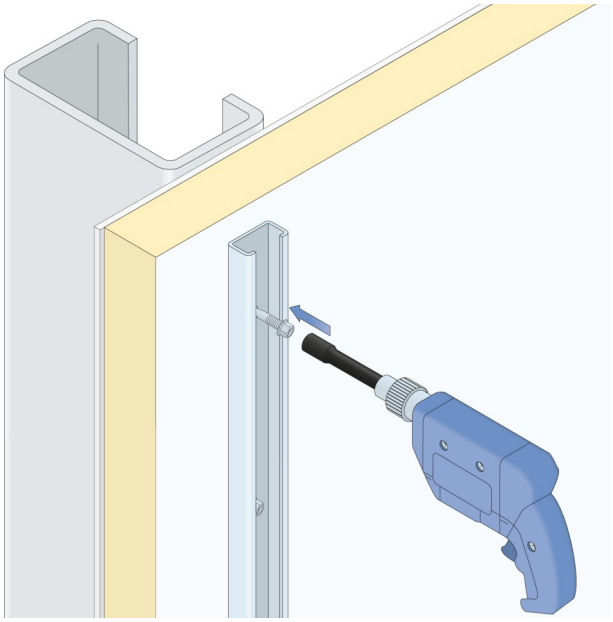
Screw Reference	Steel Thickness	HTSS-65-2PT-W	HTSS-82-2PT-W	HTSS-100-2PT-W	HTSS-115-2PT-W	HTSS-135-2PT-W	HTSS-150-2PT-W	HTSS-180-2PT-W	HTSS-240-2PT-W
Material		Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Diameter (mm)		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	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
	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)		27 - 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.

INSTALLATION GUIDE

ANCON 25/14 RESTRAINT SYSTEM

FOR TYING BRICKWORK TO INSITU STRUCTURES THROUGH AN INSULATION LAYER



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

Screw Reference	Steel Thickness	HTCS-65-2PT-W	HTCS-85-2PT-W	HTCS-115-2PT-W	HTCS-135-2PT-W	HTCS-150-2PT-W	HTCS-175-2PT-W	HTCS-235-2PT-W
Material		Coated Steel	Coated Steel	Coated Steel	Coated Steel	Coated Steel	Coated Steel	Coated Steel
Diameter (mm)		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Length (mm)		65	85	115	135	150	175	235
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
Resistance Tension (kN)	1.2mm	1.21	1.21	1.21	1.21	1.21	1.21	1.21
	1.4mm	1.58	1.58	1.58	1.58	1.58	1.58	1.58
	1.6mm	1.75	1.75	1.75	1.75	1.75	1.75	1.75
	1.8mm	2.08	2.08	2.08	2.08	2.08	2.08	2.08
	2.0mm	2.39	2.39	2.39	2.39	2.39	2.39	2.39
	2.5mm	3.86	3.86	3.86	3.86	3.86	3.86	3.86
	3.0mm	4.52	4.52	4.52	4.52	4.52	4.52	4.52
Resistance Shear (kN)		4.50	4.50	4.50	4.50	4.50	4.50	4.50
Maximum Insulation/ Material Thickness (mm)		33 - 50	45 - 70	55 - 100	75 - 120	90 - 135	115 - 160	155 - 220

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

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.

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

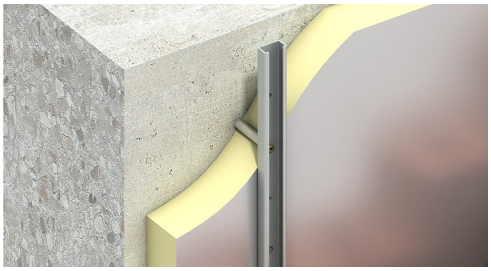
Note: A factor of safety of 2 has been applied to the ultimate values to determine a design resistance. Minimum panel thickness is dependent on the timber thickness. Minimum = screw length - timber thickness. If the screw length is less than the timber thickness then the minimum panel thickness is zero.

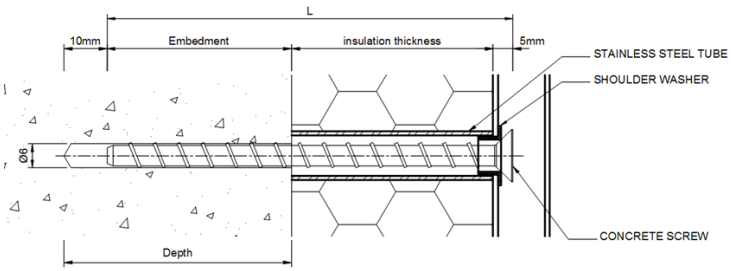
FIXING THE CHANNEL TO CONCRETE

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). Push an Ancon Compression Sleeve through the insulation at each fixing location.

The channel should then be screwed into position (see table for fixing centres), using a standard power tool and a T30 driver bit, assuring the nylon shoulder isolation washer is located between the zinc plated screw head and the stainless steel channel.





CFS Screws for fixing into Concrete (min 20/25)

Screw Reference	CFS100	CFS110	CFS120	CFS130	CFS150	CFS180	CFS200	CFS212	CFS252	CFS302
Screw Length L (mm)	100	110	120	130	150	180	200	212	252	302
Min. Embedment (mm)	50	50	50	50	50	50	50	30	30	30
Min Hole Depth (mm)	60	60	60	60	60	60	60	40	40	40
Insulation/Material Thickness (mm)	35-45	45-55	55-65	65-75	75-95	95-125	125-145	145-177	150-217	200-267

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. 267*	225
2	Rigid	Max 220	Max 186	Max. 267*	337.5
3	Rigid	Max 220	Max 186	Max. 267*	337.5 / 450**
4	Rigid	Max 220	Max 186	Max. 267*	337.5 / 450*
1	ROCKWOOL Rainscreen Duo Slab®/ Isover Polterm Max Plus/ Knauf Insulation Earthwool RainScreen Slab	Max 180 (-220*)	Max 180 (-186*)	Max. 267*	225
2		Max 180 (-220*)	Max 180 (-186*)	Max. 267*	337.5
3		Max 180 (-220*)	Max 180 (-186*)	Max. 267*	337.5 / 450**
4		Max 180 (-220*)	Max 180 (-186*)	Max. 267*	337.5 / 450**
1	Other Insulation	Max 220*	Max 186*	Max. 267*	225
2	Other Insulation	Max 220*	Max 186*	Max. 267*	337.5
3	Other Insulation	Max 220*	Max 186*	Max. 267*	337.5 / 450**
4	Other Insulation	Max 220*	Max 186*	Max. 267*	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

INSTALLATION GUIDE

ANCON 25/14 RESTRAINT SYSTEM

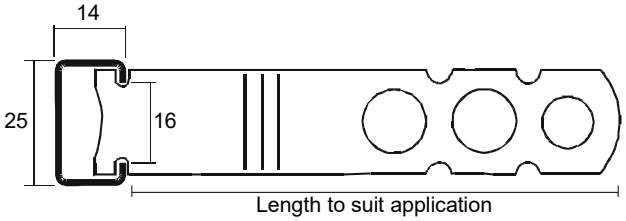
FOR TYING BRICKWORK TO INSITU STRUCTURES THROUGH AN INSULATION LAYER

INSTALLING THE WALL TIES

Ancon _ _25 wall ties (typically SD25 as shown here) 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 50mm in the outer leaf and should be fitted such that the drip part of the tie is pointing downwards.

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

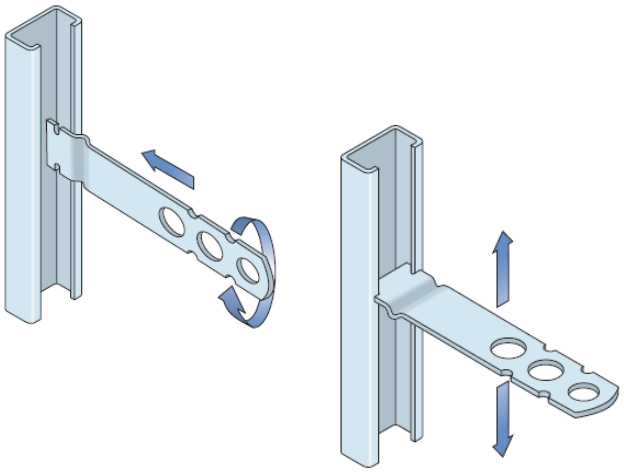


ANCON SD25 TIE & 25/14 CHANNEL
25/14 channel will accept all Ancon ties referenced _ _25

Recommended Fixing Centres for Wall Ties

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

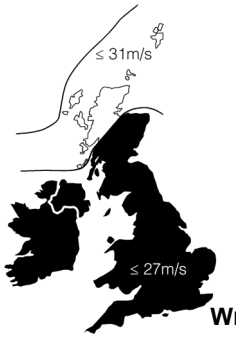
Assumes 25/14 channels installed at maximum 600mm centres on plan. See page 3 for fixing screw centres. Centres shown achieve equivalent tie type performances to PD 6697, 6.2.2.5 Table 12 (Type M2 Mortar).



Wall Tie Types

Required Wall Tie Type	Application	Maximum Building Height (m)	Geographical Location
Type 4	Light duty tie, suitable for box-form domestic dwellings	10	Suitable for flat sites in towns/cities where basic wind speed does not exceed 27m/s and altitude is not more than 150m above sea level
Type 3	Basic wall tie, suitable for residential and small commercial buildings	15	Suitable for flat sites where basic wind speed is up to 27m/s and altitude is not more than 150m above sea level
Type 2	General purpose tie, suitable for residential and small commercial buildings	15	Suitable for flat sites where basic wind speed is up to 31m/s and altitude is not more than 150m above sea level
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

Note: Refer to PD 6697:2010 and BS EN 1991-1-4: 2005 for complete information.



WIND SPEED MAP

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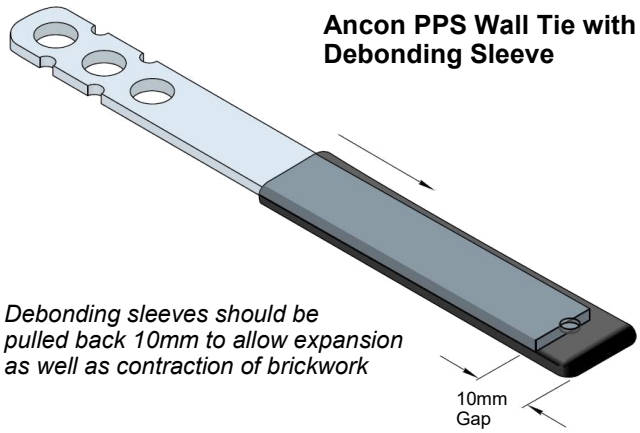
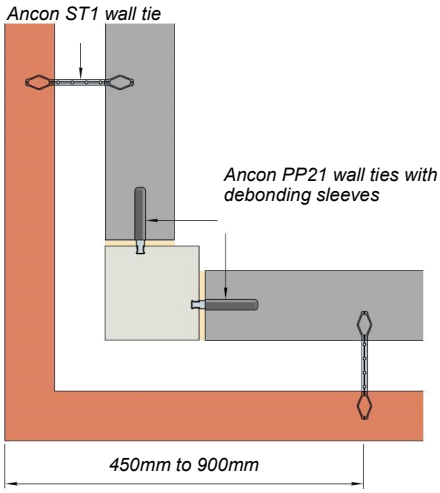
INSTALLATION GUIDE
VERTICAL MOVEMENT JOINTS

Debonding sleeves are used on plain-ended wall ties, like the Ancon PP21 or PPB, at vertical movement joints. The tie will restrain the masonry against lateral wind loads whilst the sleeve will allow the masonry to expand or contract.

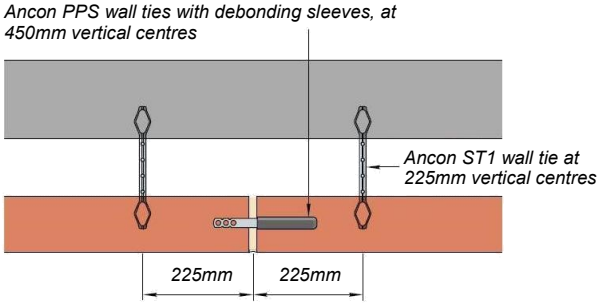
Debonding sleeves should be installed with a 10mm gap at the end to allow for expansion of the masonry.

Ancon PPS Wall Tie with Debonding Sleeve

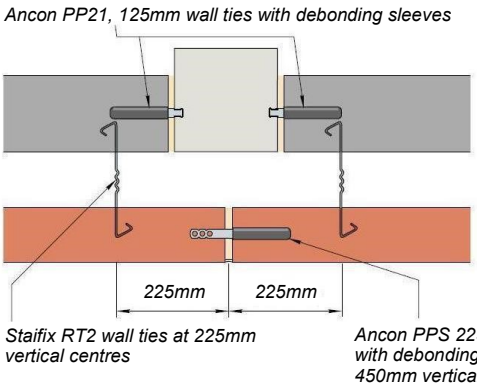




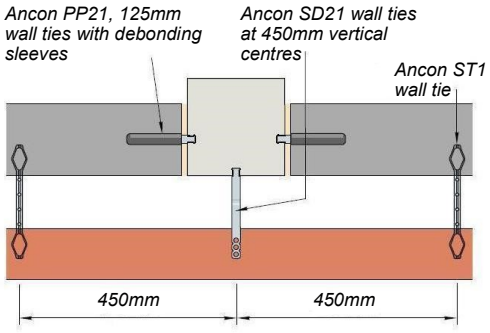
External Corner with Fully Bonded Brickwork



Cavity Wall with Vertical Movement Joint in Brickwork



Intermediate Column with Vertical Movement Joints in both Brickwork and Blockwork



Intermediate Column with Vertical Movement Joints in Blockwork

Note: *All spacings are maximums. The type of cavity wall tie and spacing will be determined by the cavity width, height of brickwork, wind loading and type of building.*

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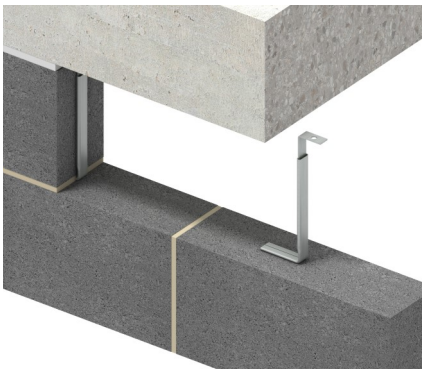
INSTALLATION GUIDE

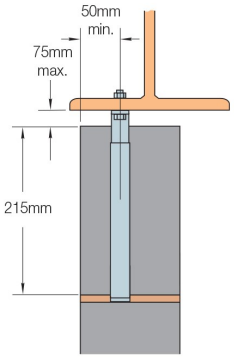
INTERNAL HEAD RESTRAINTS

Ancon®

IHR Internal Head Restraints

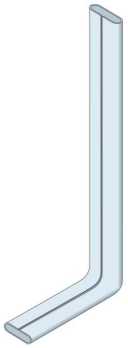
The Ancon IHR is designed to restrain the top of internal walls or the top of the inner leaf of a cavity wall. It comprises an L-shaped channel stem and a top section available in a variety of designs to suit different fixing methods and substrates; the top section slides in the channel to accommodate vertical movement between the blockwork and the structure.



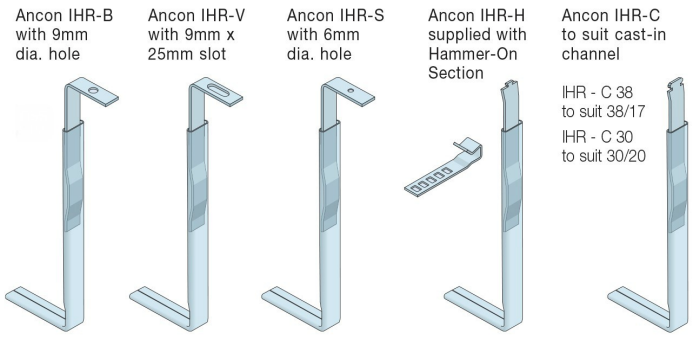


Channel Stem

The channel stem is closed at the front to prevent mortar ingress.



The standard height of an IHR will suit a 215mm block. Other stem lengths are also available to suit cut blocks with a minimum height of 150mm.



Sliding Top Section

The IHR sliding top section is available in two standard lengths; one length to accommodate a gap of up to 50mm, and an other to accommodate gaps of 51-75mm.

Positioning

The horizontal leg of the lower section, should be placed directly on top of the block below. The vertical joint should be filled with mortar each side of the stem. IHR's should ideally be positioned centrally in the width of the wall, where this is not possible the centre of the stem should be at least 50mm from the edge of the wall.

IHR Head Restraints will typically be positioned at 450mm or 900mm centres depending on the expected load at the top of the wall. The table provides the design resistance per metre for the IHR range when installed with a 25mm, 50mm and 75mm gap.

Fixings

The sliding tie is provided with either a hole (IHR - B) or slot (IHR - V) to suit M8 bolts, a hole (IHR-S) to suit a SDTSS-38-5PT self-tapping screw, a notch end (IHR-C) to fix directly into a 38/17 or 30/20 cast-in channel or a notch end (IHR-H) to suit the Ancon Hammer-On Section that attaches to a 6.8mm - 25mm steel flange without site drilling.

Where IHR-B or IHR-V are used, the head of the fixing bolt will reduce the amount of possible vertical movement. Bolt projections should be kept to a minimum, the top of the block may need to be cut back locally to accommodate the fixing head.

Before Installation

Check that the IHR ordered and supplied meets the dimensions and performance specifications of your application.

		Full Blocks (215mm)			Cut Blocks (min. 150mm)		
Product Reference	**Spacing**	**25mm Gap**	**50mm Gap**	**75mm Gap**	**25mm Gap**	**50mm Gap**	**75mm Gap**
IHR-B, IHR-V, IHR-C and IHR-S	**900mm**	1.78kN/m	1.22kN/m	1.06kN/m	1.44kN/m	0.99kN/m	0.86kN/m
	450mm	3.56kN/m	2.44kN/m	2.11kN/m	2.89kN/m	1.99kN/m	1.72kN/m
IHR-H	**900mm**	1.13kN/m	1.13kN/m	1.06kN/m	0.46kN/m	0.46kN/m	0.43kN/m
	450mm	2.27kN/m	2.27kN/m	2.11kN/m	0.92kN/m	0.92kN/m	0.86kN/m

Safety Precautions

Suitable personal protective equipment should be worn at all times during handling and installation of fabricated stainless steel building products.

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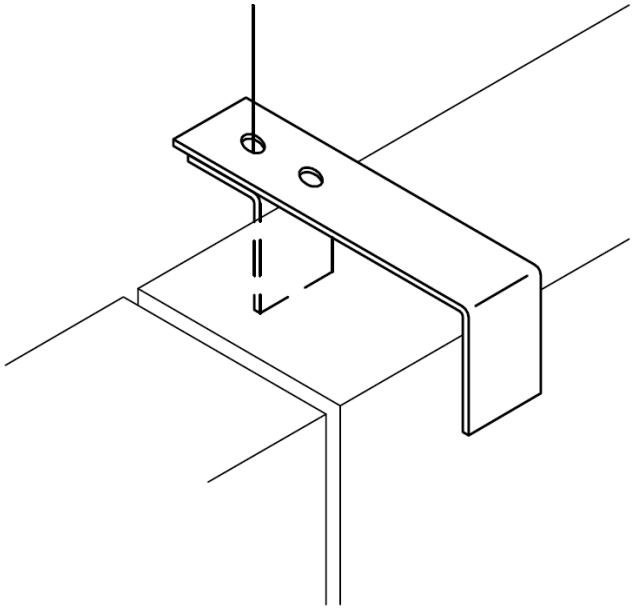
INSTALLATION GUIDE

FHR INTERNAL HEAD RESTRAINTS

ANCON FHR INTERNAL HEAD RESTRAINTS

FHR Head Restraints provide the necessary restraint at the top of masonry walls. The smaller angle is fitted below the larger angle to form an "F" profile over the head of the blockwork taking care to line up the holes in both the smaller and larger profile. (The two holes in the larger profile are set for 100mm and 140mm thicknesses of masonry).

The two profiles are then bolted to the underside of the structure using the appropriate fixing.



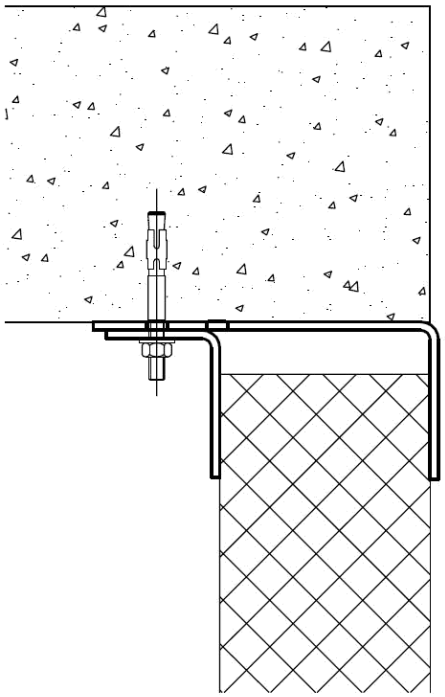
POSITION

FHR Head Restraints will typically be positioned at 450mm or 900mm centres depending on the expected load at the top of the wall. Each restraint provides a design resistance of 1890N.

The gap at the top of the wall to the underside of the structure above should not exceed 25mm.

FIXINGS

Where FHR Head Restraints are fixed back to the underside of concrete soffits Ancon recommends a M8 FBNII Expansion Bolt be used. Where fixing to the underside of structural steelwork a M8 isolated setscrew should be used. Please contact Ancon for tightening torques and allowable edge distances.



SECTION THROUGH

SAFETY PRECAUTIONS

Ancon stainless steel products are produced from sheared plate. As with all such industrial fabrications, these may present sharp edges. **Suitable personal protective equipment should be worn at all times during handling and installation.**

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INSTALLATION GUIDE

SLIDING ANCHORS

ANCON SAH – SLIDING ANCHORS

Sliding anchor fixings provide restraint to the top of masonry cavity wall panels. They are not intended for use with single leaf masonry panels. The sliding anchor fixing will accommodate vertical movement due to shrinkage or thermal movement of the wall or structural frame. The sliding anchor ties slide up or down relative to the movement.

INSTALLATION

The sliding anchor stems can be fixed to concrete or steelwork. The standard method of fixing to concrete is achieved by utilising an M10 single expansion bolt through the standard 12mm diameter hole in the head of the stem. The size of hole in the stem can be varied between 6mm and 14mm dependant upon the type of bolt used. The sliding anchor stems can also be fixed back to 30/20 and 28/15 cast-in channels.

When fixing to steelwork, it is recommended that stainless steel setscrews are used with nylon washers to give insulation between the bolt head and the structural steel.

It is important when the stem is installed that it is vertical in both planes and central in the clear cavity.

TIE INSTALLATION

To correctly install sliding anchors, at least one tie should be positioned in the inner leaf.

The length of both one-way and two-way ties should be such to allow a recommended embedment of 62.5mm in each leaf, thus allowing some tolerance for cavity variations. It is recommended that the uppermost tie be positioned not more than 75mm below the fixing position.

SAFETY PRECAUTIONS

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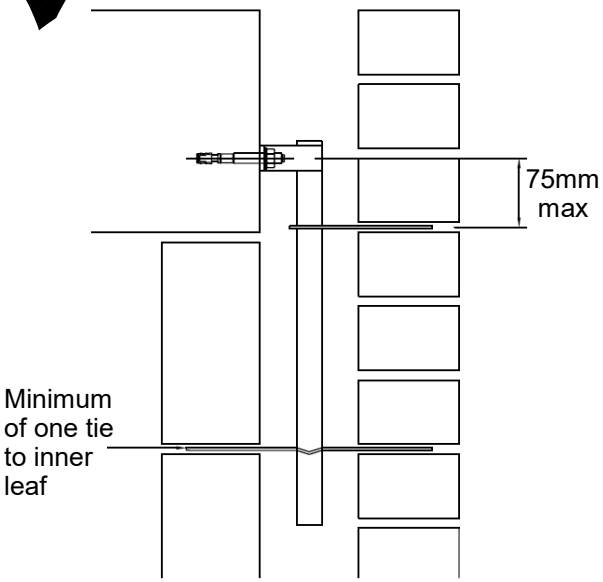
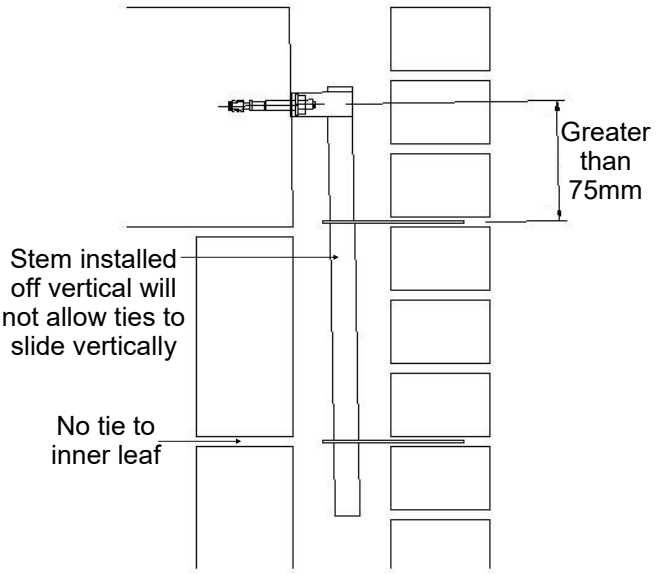
CORRECT INSTALLATION



INCORRECT INSTALLATION



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INSTALLATION GUIDE

ANCON NON-DRILL RANGE

THE PRODUCT RANGE

Ancon's Non-Drill range of fixings joins masonry to structural steelwork without shot-firing or drilling. They restrain walls against lateral wind loads. The range comprises:

- **Internal Column Tie (Standard and Bespoke Sizes)**
- **Briclok Tie**
- **Hammer-On Column Tie**
- **Hammer-On IHR-H Head Restraint**

AVOIDING BI-METALLIC CORROSION

Bi-metallic corrosion may occur in a damp environment where stainless steel fixings are in contact with a structural steel frame. This will not affect the stainless steel but may cause slight surface corrosion to the mild steel. Best practice is to isolate the two dissimilar metals. Bitumen paint or some other form of isolation e.g. adhesive tape, applied at the point of contact will prevent this corrosion.

SAFETY PRECAUTIONS

Ancon products are produced from stainless steel plate, coil and wire. As with all such construction products, these may present sharp edges. **Suitable personal protective equipment should be worn at all times during handling and installation.**

INTERNAL COLUMN TIE

The internal column tie fits between the flanges of popular UB and UC steel sections. A series of holes provides the necessary anchorage to the blockwork.

The tie is available in seven standard lengths to suit the steel sections shown in the table. The ties are positioned just inside the column flanges at every joint and embedded in the mortar. Blockwork should extend as far as possible towards the web of the column so that there is at least 30mm of blockwork beyond the tie.

When not a snug fit against both flanges, these ties must be in contact with one column flange; the choice of flange should alternate at each course.

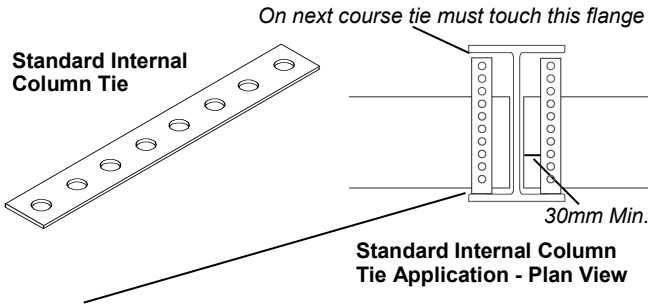
Non-standard variations of this product are designed for use where the blockwork is situated outside the column flange.

BRICLOK TIES

Briclok fits to a column flange and can be used either across a cavity or back into the inner leaf. It is available in two types and two lengths, see table for full details.

Select the correct slot size on the Briclok tie. The slot size should be as near as possible to the flange size on the column but allow the flange to pass the 10mm guide mark clearly shown on the Briclok ties. The Briclok tie should be positioned by hand and be a loose fit on the column flange. It must not be forced onto the flange in any way. The other end of the Briclok tie should be fully embedded into the bed joint to a minimum depth of 60mm.

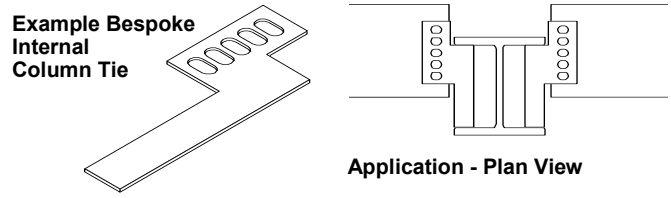
When installed into the inner leaf, there must be a minimum of 25mm between the external leaf and the nearest edge of a Briclok. Ensure adequate drainage and ventilation in the cavity at each column location and remove any mortar droppings from the ties.



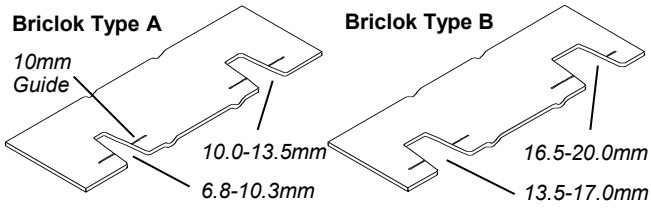
Standard Internal Column Tie Application - Plan View

The tie must be in contact with one flange; the choice of flange should alternate at each course

Standard Lengths	Beam/Column Sizes
179 mm	203 x 203 UC
186 mm	203 x 133 UB
224 mm	254 x 254 UC
232 mm	254 x 146 UB
275 mm	305 x 305 UC
281 mm	305 x 127 & 165 UB
330 mm	356 x 127 & 171 UB

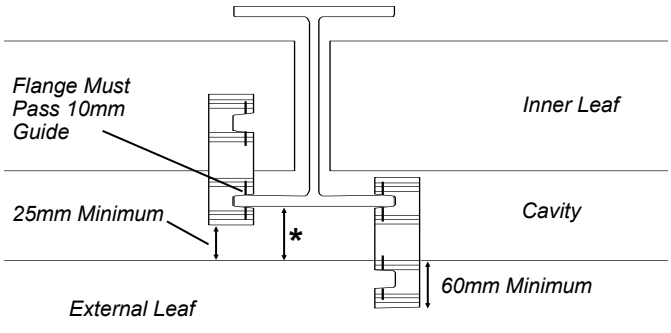


Application - Plan View



Product Code	Length	Open Cavity *	Flange Thickness
Briclok150A	150 mm	20-50 mm	6.8-13.5 mm
Briclok180A	180 mm	50-80 mm	6.8-13.5 mm
Briclok150B	150 mm	20-50 mm	13.5-20.0 mm
Briclok180B	180 mm	50-80 mm	13.5-20.0 mm

** Open cavity at column face*

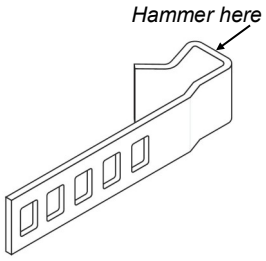


Briclok Application - Plan View

HAMMER-ON SECTION

Available in five sizes to accommodate a steel thickness from 6.8mm to 25mm, this fixing is simply hammered onto the flange. It is utilised either on a column with a tie or on a beam with an internal head restraint.

The Hammer-On Section resists load in one direction only and must be installed on alternate sides of the flange. Ties should be installed at 225mm vertical centres and head restraints at 450mm horizontal centres.



Hammer-On Section

Hammer-On Section Ref.	Flange Thickness Accommodated
HOS-XS (+ length)	6.8-10 mm
HOS-S (+ length)	10-13 mm
HOS-M (+ length)	14-17 mm
HOS-L (+ length)	18-21 mm
HOS-XL (+ length)	22-25 mm

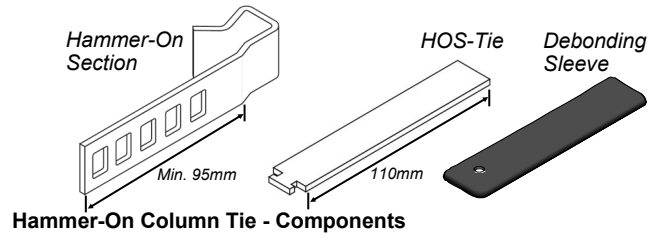
HAMMER-ON COLUMN TIE

The hammer-on column tie is a two-part wall tie used for transferring horizontal shear from the end of a wall into the flange of a steel column.

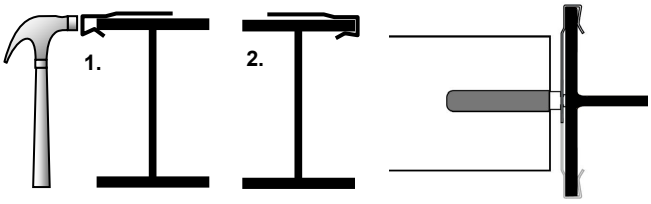
The appropriately sized Hammer-On Section is placed on the column flange at the correct height with the longer side to the outside of the column. The flat return is then hammered onto the flange until the inside of the return is in contact with the edge of the column flange.

The notched end of the tie is located in one of the five rectangular slots so that its position is central within the blockwork, or at least 40mm from the edge of the block. A plastic debonding sleeve should be fitted to the tie which should be surrounded by mortar, before the next block is placed on top.

The procedure will be repeated at each block course. **Important: The Hammer-On Section must be fixed to alternate sides of the flange.**



Hammer-On Column Tie - Components



Plan View Application - The Hammer-On Section MUST be fixed to alternate sides of the flange (225mm Vertical Centres) as work progresses

HAMMER-ON IHR-H HEAD RESTRAINT

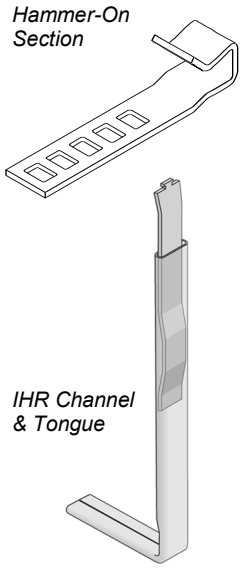
IHR Head Restraints provide the necessary restraint at the top of masonry walls. The tongue section, fixed at the top, slides inside the lower channel section to allow vertical movement to take place between the wall and the structural frame.

The standard IHR is designed to suit a 215mm high block, however bespoke channel lengths are available. The sliding top section is available in two lengths to accommodate gaps of 25-50mm and 51-75mm.

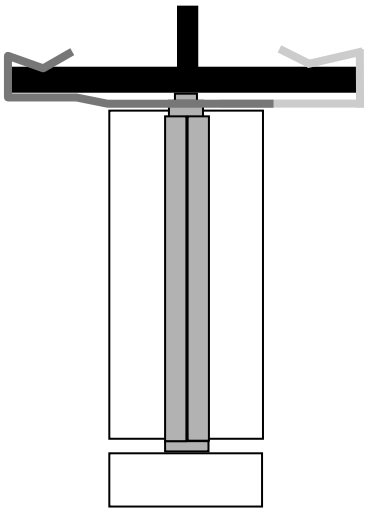
IHRs should ideally be positioned centrally in the width of the wall, where this is not possible the centre of the stem should be at least 50mm from the edge of the wall. The horizontal leg of the lower section which is approximately 6mm thick, should be placed directly on top of the block below. Both the bed joint and each side of the stem in the vertical joint should be filled with mortar.

The appropriately sized Hammer-On Section is placed on the steel flange at the correct position with the longer side to the underneath. The flat return is then hammered until the inside of the return is in contact with the edge of the flange. Fix at 450mm centres.

Important: The Hammer-On Section must be fixed to alternate sides of the beam.



Hammer-On IHR-H Components



IHR-H Application - Vertical Section View - The Hammer-On Section MUST be fixed to alternate sides of the flange (450mm horizontal centres)

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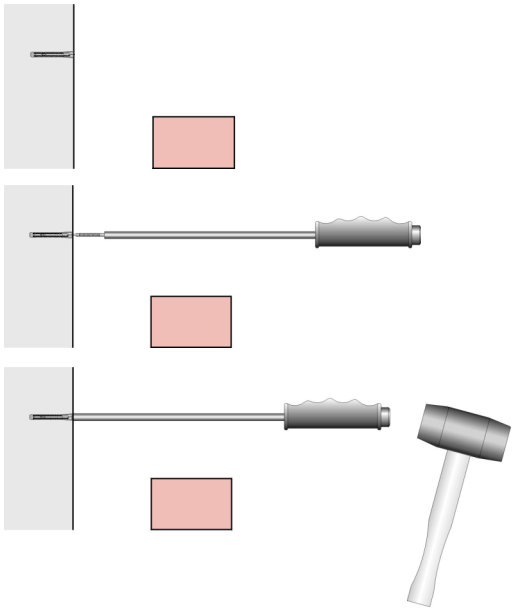
INSTALLATION GUIDE

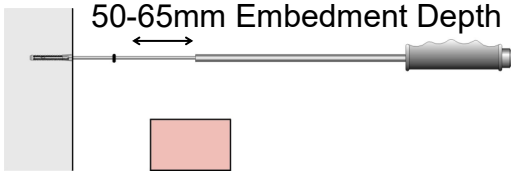
ANCON HIT HAMMER-IN TIE

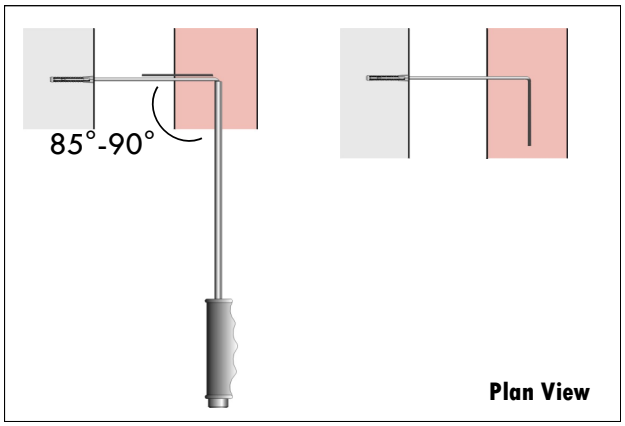
FOR FIXING BRICKWORK TO CONCRETE PANELS

INSTALLATION PROCEDURE

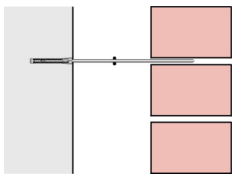
Cross Section View







Cross Section View



Ideally, brickwork should be kept one course clear during installation of the ties. Ties should be installed level, or with a slight fall to the outer leaf and always bedded on, and then surrounded by, fresh mortar.

1. Drill a 6mm diameter hole 50mm deep, into the concrete frame and insert the nylon plug into the hole.

2. Insert the plain end of the tie into the tool, as far as it reaches leaving the 45mm thread exposed. Locate the tie in the plug.

3. Hammer the tool until the tie is no longer visible and the tool is flush with the concrete. Remove the tool and push an 'O' ring on to the tie to a central position in the open cavity. Alternatively, the 'O' ring can be fitted after stage 5 below.

4. Re-insert the tie in the tool leaving enough tie exposed to allow for adequate embedment in the outer leaf of brickwork. Ancon recommends an embedment depth between 50-65mm.

5. Supporting the tie by hand in the open cavity, bend parallel to the brickwork, ensuring an angle of 85-90° is achieved.

6. Remove the tool and build the tie into the bed joint of the outer leaf of brickwork.

INSTALLATION TOOL AND NYLON PLUG

The installation tool has been specially designed with hardened steel located at both the tip, and base, providing extra strength where required. **The Ancon HIT must be used with the plug supplied.**

Note: The Ancon HiT can be used with high density blockwork of 7N/mm^2 and above.

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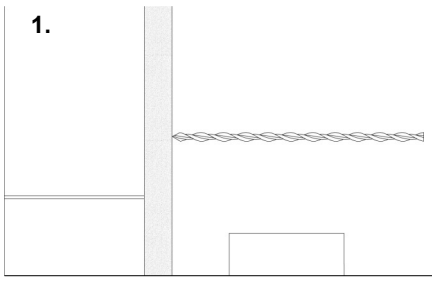
INSTALLATION GUIDE

STAIFIX TJ2 WALL TIES
FOR THIN-JOINT BLOCKWORK

Staifix® Stainless steel wall ties

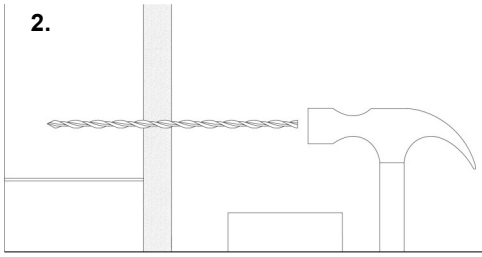
INSTALLATION PROCEDURE

1.



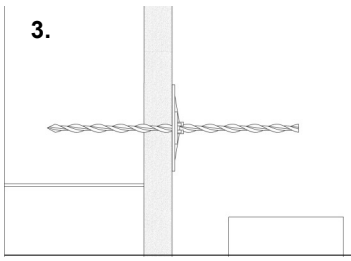
Keep the brickwork one course clear during installation of the ties. Position the tie against the inner leaf so that the outer end will be located in the bed joint of the external leaf.

2.



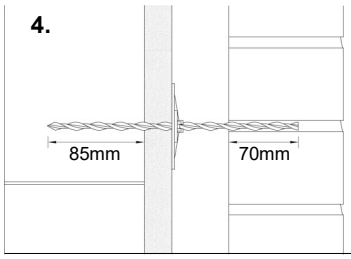
Hammer the tie, through the insulation, and into the blockwork to the correct embedment.

3.



Install a black Teplo Clip to restrain the insulation.

4.



Build into the bed joint of the outer leaf ensuring the tie is surrounded by mortar.

The Staifix-Thor Helical TJ2 Tie hammers directly into aerated concrete blocks. It is ideal for thin-joint blockwork and other applications where the joints in the inner and outer leaves of masonry are not aligned.

The TJ2 is suitable for housing and small commercial developments. It meets the requirements of the NHBC and PD 6697 as a type 2 or 3 wall tie depending on the block used and the cavity width (see table below).

	TIE TYPE TO PD 6697	
BLOCK STRENGTH N/MM^2	50, 75, 100MM CAVITY	125MM, 150MM CAVITY
2.8 - 4.0	3	3
4.0 - 10.5	2	2

TIE LENGTH	CAVITY WIDTH
205 mm	50 mm
230 mm	75 mm
255 mm	100 mm
280 mm	125 mm
305 mm	150 mm

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INSTALLATION GUIDE

CAVITY WALL TIES

IMPORTANT HEALTH AND SAFETY INFORMATION: PLEASE READ

There is a risk of injury to site personnel if wall ties are left protruding from a single wall leaf before the second leaf is constructed. Ancon recommends both leaves of a cavity wall are built simultaneously to eliminate this risk and to ensure that bed joints align and wall ties are parallel.

If you chose to build each leaf separately, the site manager should make all workers and visitors aware of the risk posed by protruding wall ties.

To reduce the risk of injury, Ancon cavity wall ties feature rounded safety ends (except for the original basalt-fibre TeploTie).

TeploTie wall ties are supplied with brightly-coloured plastic end caps to draw attention to the tie ends. These end caps should be applied loosely to the outer end of the tie as work on the first leaf progresses; the caps must then be removed before the tie is built into the second leaf.

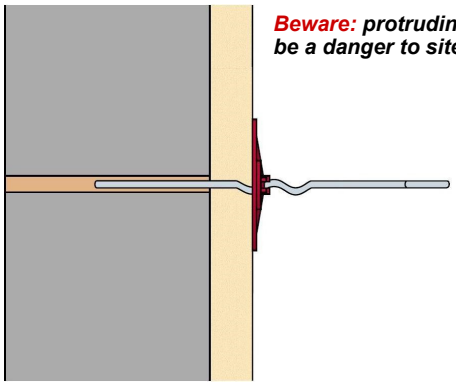
Wide Cavity Construction

When installing wall ties in wide cavities (175mm+) it is particularly important to ensure that bed joints align and wall ties are parallel. In order to achieve this, Ancon recommends that both leaves of the cavity wall are built simultaneously.

Density & Positioning of Ties

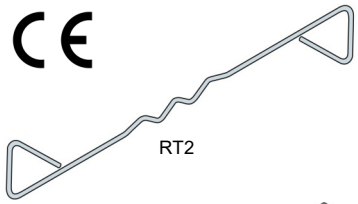
For walls in which both leaves are 90mm or thicker, ties should be used at not less than 2.5 per square metre (900mm horizontal x 450mm vertical centres). This guidance is applicable to the tie lengths shown in the table overleaf which covers cavities up to 300mm. Maximum wall tie spacing may need to be reduced in wider cavities, generally to 600mm horizontal x 450mm vertical centres (3.7 ties per square metre). Contact Ancon for further information.

Ties should be evenly distributed over the wall area, except around openings, and should preferably be staggered. 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, located not more than 225mm from the edge. A typical layout is shown below.



***Beware:** protruding ties can be a danger to site workers*

All site workers and visitors should be made aware of the risk posed by wall ties protruding from a single wall leaf

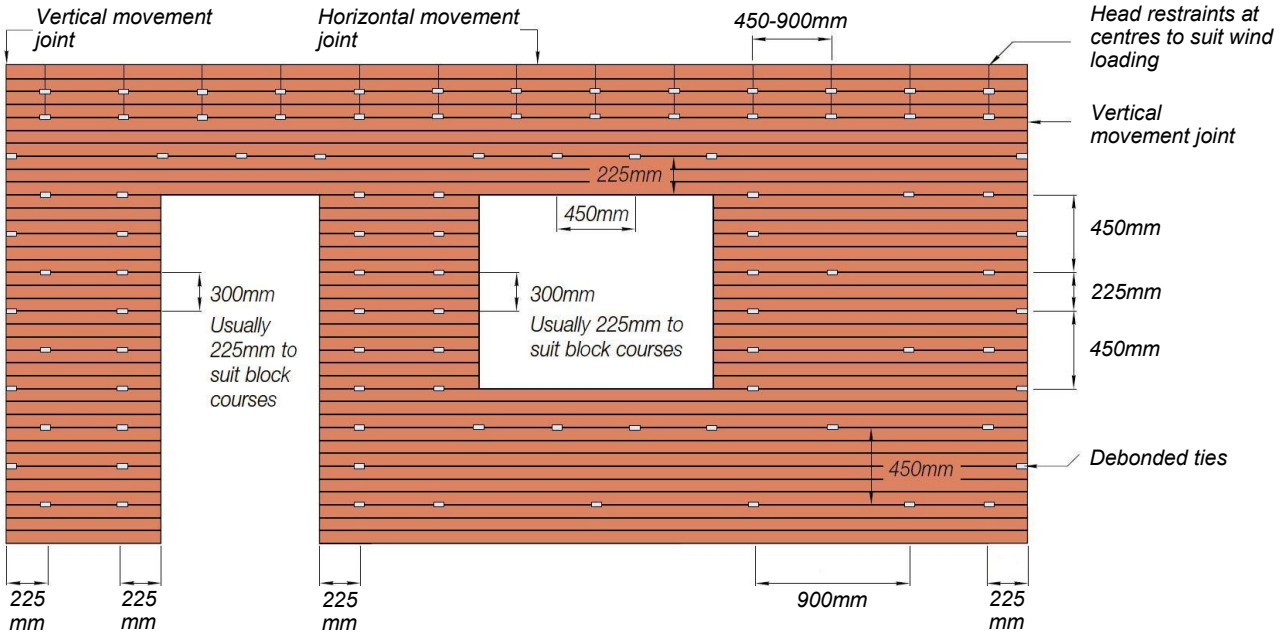


Most Ancon cavity wall ties feature rounded safety ends to reduce the risk of injury

The original TeploTie is supplied with a safety end cap to highlight the tie end and protect against injury. These caps MUST be removed as work progresses and not built into the bed joint

Typical Layout of Wall Ties Indicating Maximum Spacing

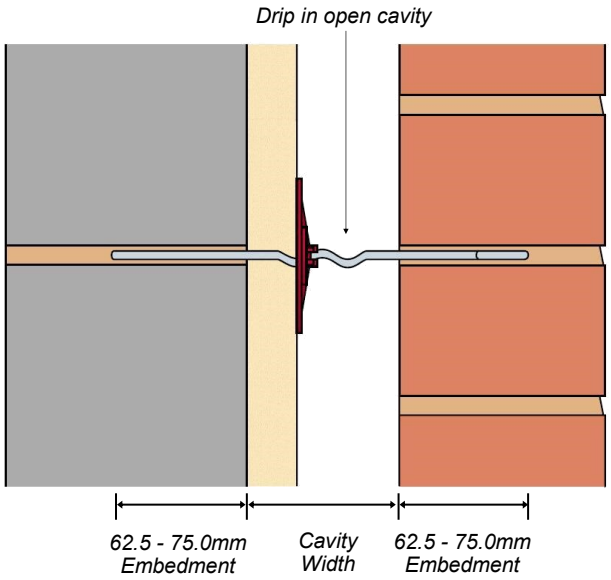
(Spacing may need to be reduced for cavities over 300mm)



Length of Tie & Embedment
Wall ties should be of the correct length to ensure they are properly embedded in each masonry leaf. Ancon recommends tie lengths which achieve an embedment of between 62.5mm and 75mm (see table below) to cover a 25mm cavity range. Masonry-to-masonry wall ties are typically symmetrical and should be centred from the middle of the cavity to ensure equal embedment in each leaf.

Recommended Wall Tie Lengths

Cavity Width (mm)	Tie Length (mm)
50-75	200
76-100	225
101-125	250
126-150	275
151-175	300
176-200	325
201-225	350
226-250	375
251-275	400
276-300	425
301-325	450
326-350	475
351-375	500
376-400	525
401-425	550
426-450	575



Installation Guidance
Wall ties are important to the stability of masonry and failure to install them correctly may lead to damp penetration, cracking or even the collapse of walls.

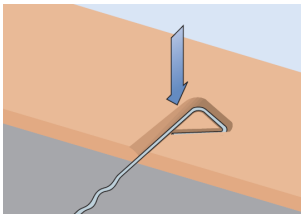
Wall ties should be pressed down in fresh mortar. They should be surrounded by mortar and not simply positioned directly onto masonry with mortar placed around them.

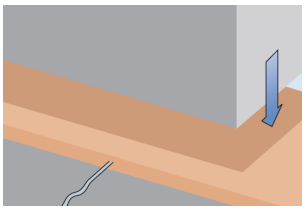
Ideally, ties should be installed with a slight fall to the outer leaf, not towards the inner leaf as this could provide a path for moisture to cross the cavity.

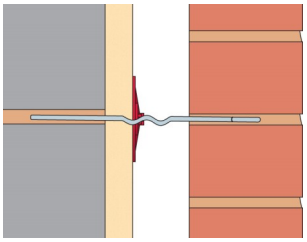
The drip part of the tie should point downward and be positioned near the centre of the open cavity. Ties with multiple drips, like the Staifix RT2, can often be positioned centrally as part of the drip will normally be near the centre of the open section of a partial fill cavity. ‘O rings’ as used on the Teplo range should be moved along the shank to the open cavity. Installed ties should be clear of mortar droppings to allow the drip to function and prevent water from crossing to the inner leaf of masonry.

The practice of bending up installed wire ties should be discouraged. This can adversely affect the performance of the tie and weaken the embedment in the inner leaf. Rigid ties should never be bent on site.

To ensure cavity wall ties are effective at tying the leaves together they should be installed as the inner leaf is constructed and not simply pushed into a joint.







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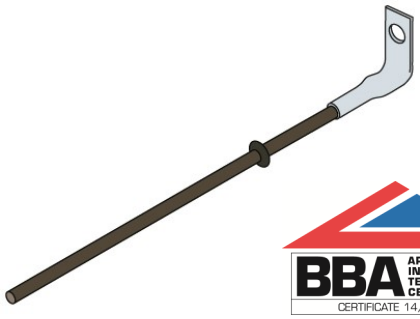
INSTALLATION GUIDE
TEPLO-L-TIE

The Teplo-L-Tie is ideal where a low thermal conductivity restraint fixing is required between a masonry outer leaf and an in-situ structure. It is suitable for fixing to steel, timber, concrete and masonry.

An o-ring drip prevents water crossing the cavity and the Teplo-L-Tie can be used with the black Teplo-Clip where insulation is to be retained.

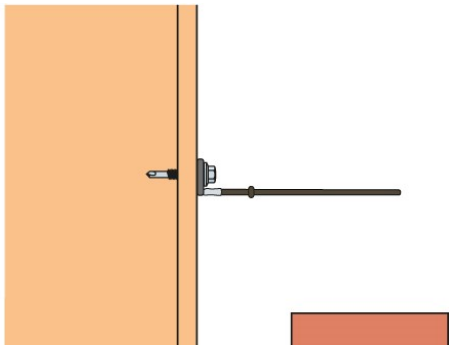


INSTALLATION GUIDANCE

Restraint fixings are important to the stability of masonry and failure to install them correctly may lead to damp penetration, cracking or even the collapse of walls.

'O rings' should be moved along the shank to the open cavity. Installed ties should be clear of mortar droppings to allow the drip to function and prevent water from crossing to the inner leaf of masonry.

The outer leaf brickwork should be kept one course clear during installation of these ties.



Keep brickwork at least one course clear during installation

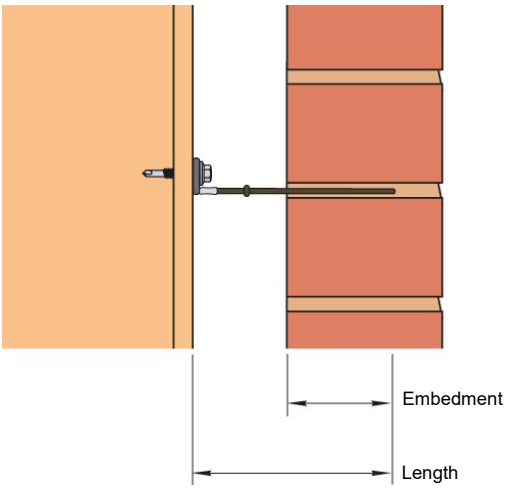
RECOMMENDED FIXINGS

The 7mm diameter hole in the upstand suits a variety of fixings, typically an M6 single expansion bolt for concrete, a plug and screw for either masonry or concrete, either an M6 set screw or SDTSS-38-5PT self-drilling screw for steelwork and a 5mm x 30mm countersunk wood screw for timber.

The Teplo-L-Tie is suitable for buildings requiring 120-minute fire resistance. Where this fire performance is required, appropriate fixings should be selected which match or exceed this 120-minute fire resistance performance.

Substrate	Recommended Ancon Fixings
Steel	M6 set screw SDTSS-38-5PT self-drilling screw
Timber	5mm x 30mm countersunk wood screw
Concrete	FBNII 6/10 single expansion bolt SX plug with M6 x 50mm hex head coach screw
Masonry	SX plug with M6 x 50mm hex head coach screw

Note: The load performance will depend on the substrate and on-site pull tests are recommended to confirm the strength of uncertain or old substrates.



Teplo-L-Tie Fixed to Steel with Self-Drilling Screw

INSULATION RETAINING CLIPS

The black Ancon Teplo-Clip Insulation Retaining Clip is suitable for use in partial fill cavities with all products in the TeploTie range.

RECOMMENDED FIXING CENTRES

Teplo-L-Ties are suitable for cavities from 100mm to 300mm. The range comprises 14 standard products which meet the performance of Tie Types 2, 3 or 4 when installed at a standard spacing of 2.5 ties per square metre; decreasing wall tie centres can increase the performance level (see table B).

Teplo-L-Tie is also a Type 6 tie, suitable for use in Timber Frame construction, installed at a standard spacing of 4.4 ties per square metre (see table A).

Teplo-L-Ties should achieve an embedment depth of 65mm in the outer leaf.

Table A - Teplo-L-Tie Type 6 Timber Frame

Product Code	Length of Tie (mm)	Cavity Width (mm)	BS5268 Type
TEPLO-L-5-165	165	100	6
TEPLO-L-5-190	190	125	6
TEPLO-L-5-215	215	150	6
TEPLO-L-5-240	240	175	6
TEPLO-L-5-265	265	200	6
TEPLO-L-7-290	290	225	6
TEPLO-L-7-315	315	250	6
TEPLO-L-7-340	340	275	6
TEPLO-L-7-365	365	300	6

Ties to be installed at a density of 4.4 per square metre in Timber Frame applications

Table B - Teplo-L-Tie Product Codes and Recommended Fixing Centres

Product Code	PD6697 Tie Type	Cavity mm	Tie Length mm	Type 1*	Type 2	Type 3	Type 4
				Recommended Spacing (mm)			
TEPLO-L-7-165	2	100	165	500 X 450	900 X 450	-	-
TEPLO-L-7-190	2	125	190	500 X 450	900 X 450	-	-
TEPLO-L-7-215	2	150	215	500 X 450	900 X 450	-	-
TEPLO-L-7-240	2	175	240	500 X 450	900 X 450	-	-
TEPLO-L-7-265	2	200	265	500 X 450	900 X 450	-	-
TEPLO-L-7-290	2	225	290	500 X 450	900 X 450	-	-
TEPLO-L-7-315	2	250	315	500 X 450	900 X 450	-	-
TEPLO-L-7-340	2	275	340	500 X 450	900 X 450	-	-
TEPLO-L-7-365	2	300	365	500 X 450	900 X 450	-	-
TEPLO-L-5-165	3	100	165	380 X 450	710 X 450	900 X 450	-
TEPLO-L-5-190	3	125	190	380 X 450	710 X 450	900 X 450	-
TEPLO-L-5-215	3	150	215	380 X 450	710 X 450	900 X 450	-
TEPLO-L-5-240	4	175	240	230 X 450	450 X 450	740 X 450	900 X 450
TEPLO-L-5-265	4	200	265	230 X 450	450 X 450	740 X 450	900 X 450

Note: Centres shown achieve equivalent tie type performances to PD6697 Table 12.
*Type 1 based on M2 mortar and a strength requirement of 2500N (PD6697) in Tension and Compression.

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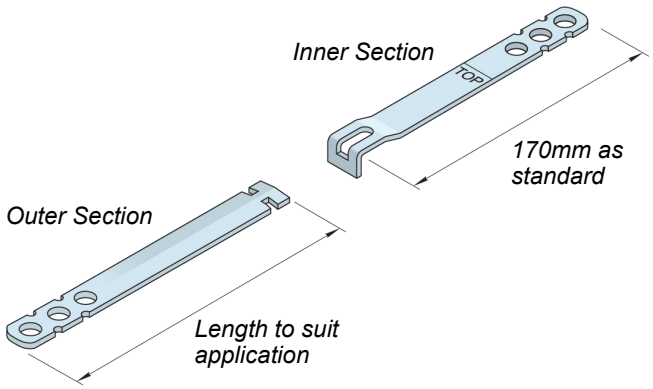
INSTALLATION GUIDE

ANCON TWO-PART WALL TIE

Cavities over 150mm which necessitate long wall ties can be difficult to balance and keep horizontal when built into the inner leaf. Two-Part Ties can be used to eliminate these issues. The Ancon Two-Part Tie has one section built into the inner leaf and the second section is installed as the outer leaf is built.



Ancon Two-Part Tie

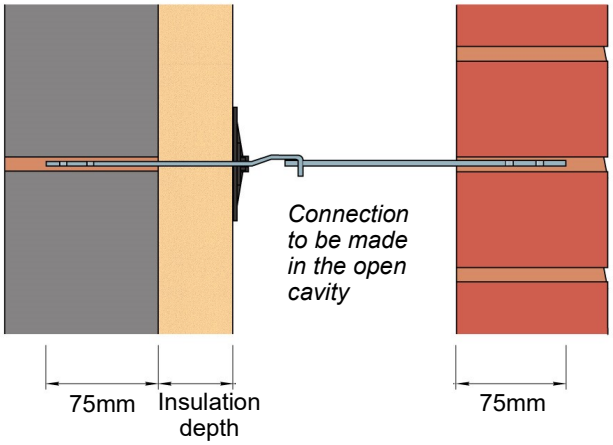
Wall Tie Lengths & Embedment Depth

The Ancon Two-Part Tie requires an embedment depth of 75mm in each leaf. The inner section is usually manufactured in a length of 170mm with variation in the cavity width being accommodated by the length of the outer section.

Where insulation thickness is in excess of 60mm, the inner section should be longer than the standard 170mm to ensure the connection between the two parts is made in the open cavity.

Recommended Length of Inner Section

Insulation Thickness (mm)	Inner Section Length (mm)
0-50	170
60 +	Insulation thickness +110



Embedment Depths

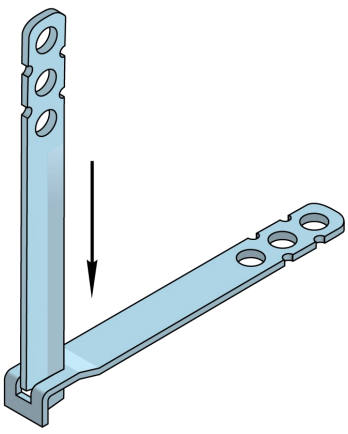
Installation Procedure

Users should check wall tie length and density with the information both above and overleaf prior to installation.

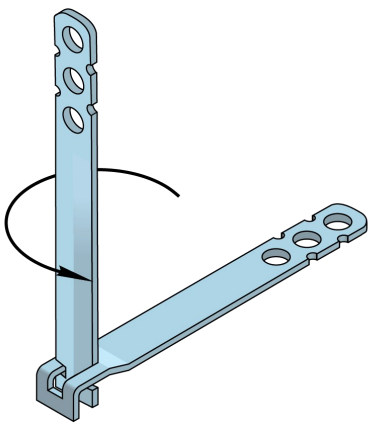
Wall ties should be pressed down in, and then surrounded by, fresh mortar. They should not simply be positioned directly onto masonry with mortar placed around them or pushed into a constructed joint.

The inner section is built into the first masonry leaf ensuring a 75mm embedment depth. Insulation should be held back using Ancon insulation retaining clips referenced ‘TJ Clip’.

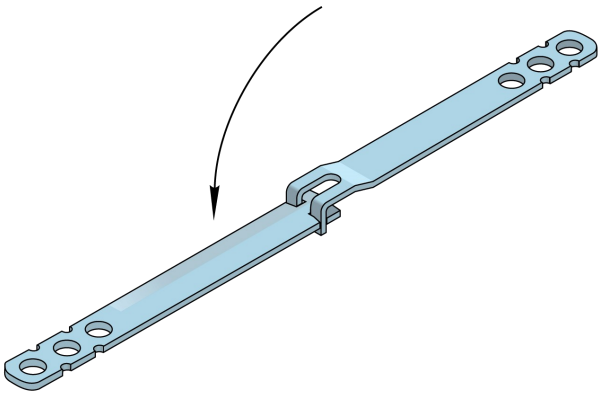
As work on the second masonry leaf progresses, the outer tie section is fixed into the inner section as shown below.



Step 1



Step 2



Step 3

Installation

Performance, Density & Positioning of Ties

When using the standard 170mm long inner section, Ancon Two-Part Ties sustain loads which exceed the requirements for a Type 2 tie (PD 6697: 2010) for cavities up to 300mm. Type 3 performance is achieved at the standard tie spacing for wider cavities up to 400mm.

The standard density of ties for walls in which both leaves are 90mm or thicker should be not less than 2.5 per square metre (900mm horizontal x 450mm vertical centres). Ties should be evenly distributed around openings and preferably staggered.

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

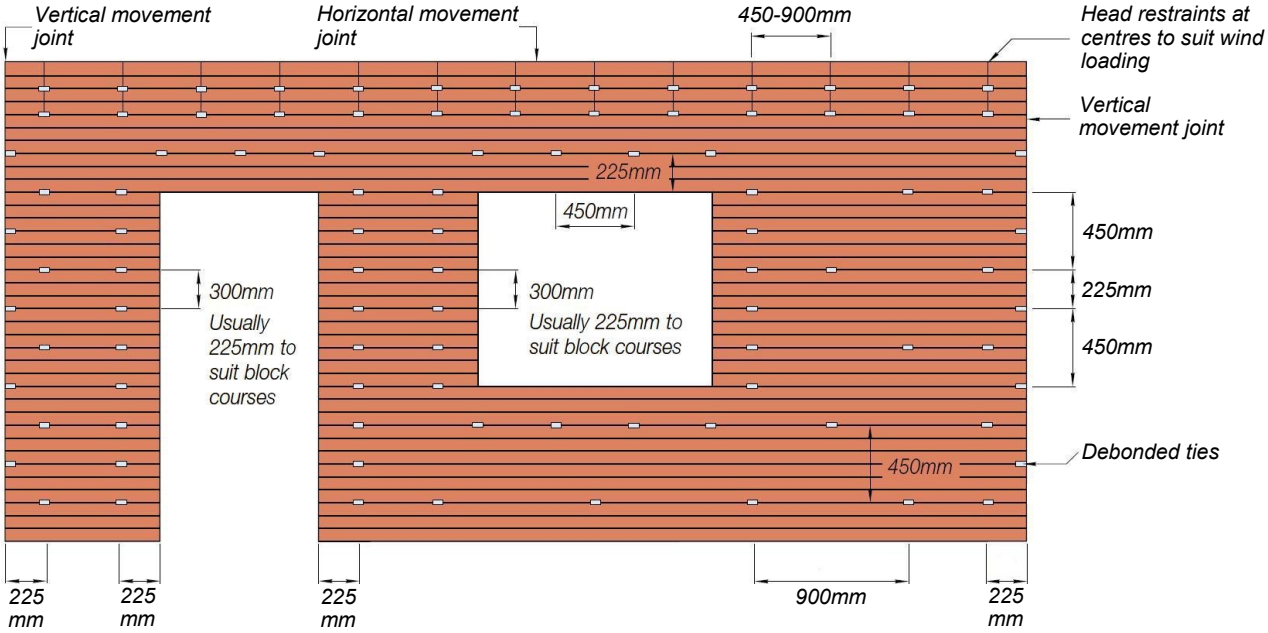
A typical layout based on the standard 900mm x 450mm spacing is shown below.

Recommended Fixing Centres for Two-Part Ties

Cavity (mm)	Type 1	Type 2	Type 3
150-300	600x450	900x450	900x450
301-400	375x450	750x450	900x450

Centres shown achieve equivalent tie type performances to PD 6697 when using the standard inner section.

Typical Layout of Wall Ties



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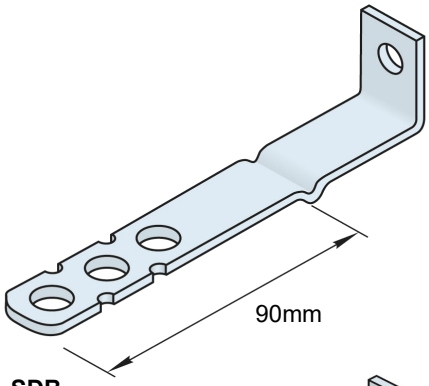
INSTALLATION GUIDE
FRAME CRAMPS

Frame cramps are an ideal solution where a restraint is required between masonry and in-situ structures. They can be fixed to a range of materials including concrete, steelwork and masonry.

SDB

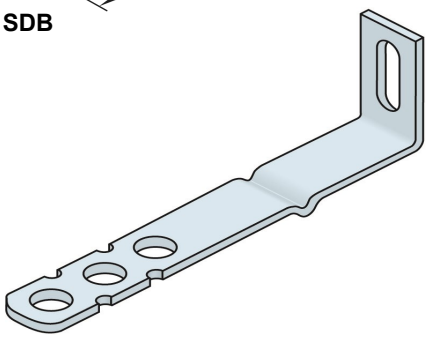
Ancon SDB Frame Cramps exceed the requirements of a Type 2 tie to PD 6697 for cavities up to 300mm. They have a 7mm diameter hole to suit a range of fixings.



SDB

SDV

Ancon SDV Frame Cramps have an 8mm x 30mm vertical slot that allows adjustment to the vertical fixing position where required. The load capacity is limited when fixed in the top of the slot therefore they are not recommended for applications where tension is a consideration.



SDV

FIXINGS

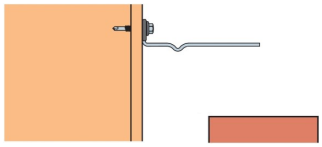
Ancon M6 single expansion bolts are recommended for fixing to concrete and M6 set screws or SDTSS-38-5PT self drilling screws for fixing to steelwork. Frame Cramps can be fixed to masonry with suitable plugs and screws or resin anchors. Poor substrates will limit the capacity of fixings and site testing is advisable in such applications.

INSTALLATION GUIDANCE

Frame Cramps are important to the stability of masonry and failure to install them correctly may lead to damp penetration, cracking or even the collapse of walls.

The drip part of the tie should point downward and be positioned near the centre of the open cavity. Installed ties should be clear of mortar droppings to allow the drip to function and prevent water from crossing to the inner leaf of masonry. The outer leaf brickwork should be kept one course clear during installation of these ties.

Ancon Frame Cramps should have a minimum embedment depth of 55mm in the outer leaf.

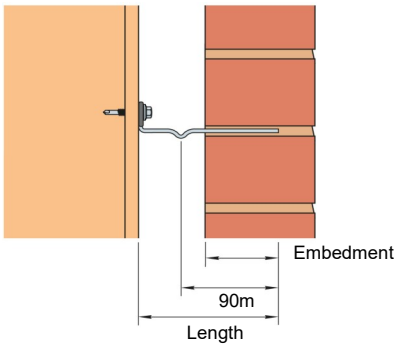


Keep brickwork at least one course clear during installation

Recommended Tie Lengths and Fixing Centres for SDB Frame Cramps

Cavity Width (mm)	Length of Wall Tie (mm)	Recommended Spacing (mm) Type 1	Type 2
20-44*	100	750 x 450	900 x 450
45-69	125	750 x 450	900 x 450
70-94	150	750 x 450	900 x 450
95-119	175	900 x 450	900 x 450
120-144	200	900 x 450	900 x 450
145-168	225	900 x 450	900 x 450
170-194	250	750 x 450	900 x 450
195-219	275	750 x 450	900 x 450
220-244	300	750 x 450	900 x 450

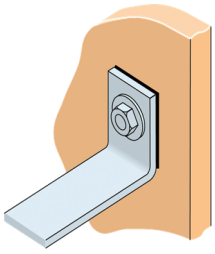
Note: *Due to limited length of tie a water drip would not be provided.
Centres shown achieve equivalent tie type performances to PD 6697: 2010 6.2.2.5 Table 12.



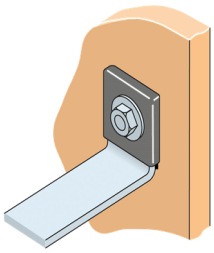
SDB Frame Cramp Fixed to Steel with Self-Drilling Screw

ISOLATION

Ancon isolation sleeves and pads are supplied blank for use with self-drilling screws to isolate stainless steel Frame Cramps from mild steel. Self-adhesive isolation pads are also available for _ _ B (20 x 30mm) and _ _ V (25 x 50mm) referenced frame cramps.



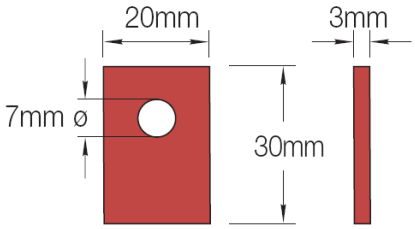
Adhesive Isolation Pad



Isolation Sleeve

THERMAL BREAKS

Ancon Frame Cramps can now be supplied with thermal breaks to be located between the upstand and the structural frame. They are manufactured from a durable fibre-reinforced thermoset plastic which has a thermal conductivity of just 0.3 W/mK.



Frame Cramp Thermal Break

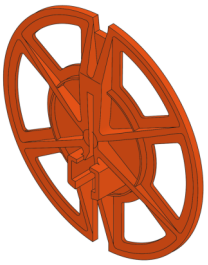
CE MARKING

A Declaration of Performance for the SDB, SPB, SDV and SPV Frame Cramps is available to download from www.ancon.co.uk/CE. These certificates feature declared load capacities established through independent testing.

CE

INSULATION RETAINING CLIPS

The Ancon red Universal Insulation Retaining Clip is suitable for use in partial fill cavities with all standard Ancon and Staifix wall ties/Frame Cramps.



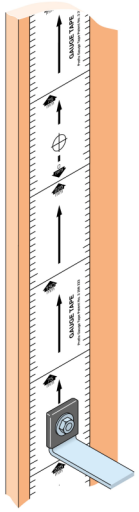
Universal Insulation Retaining Clip

PRE-FIXING AIDS

The practice of pre-fixing Frame Cramps in advance of masonry can accelerate the speed of construction and provides an opportunity to check that wall restraints have been located correctly and are securely fixed.

ANCON GAUGE TAPE (PRE-FIX PATENT 2 256 223)

Gauge Tape illustrates the standard 225mm brick/block gauge and the fixing position of frame cramps. It is applied directly to the structural frame (steel, concrete, timber or masonry) to facilitate the pre-fixing of frame cramps and to maintain accurate masonry coursing.



Ancon Gauge Tape

ANCON ISO-TW WASHER

The ISO-TW washer enables Ancon slot-ended frame cramps to be vertically adjusted within the 30mm range of the slot to suit the exact location of mortar joints without affecting the integrity of the fixing. In addition, this washer prevents bi-metallic corrosion by separating the frame cramp from the structural frame and fixing screw.

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INSTALLATION GUIDE

STAIFIX-THOR HELICAL CRACK STITCHING KIT

THE HIGH STRENGTH, NON-DISRUPTIVE REPAIR SOLUTION

This kit contains all the necessary components to permanently repair vertical or stepped cracks in masonry. Experts in the remedial market have designed the kit's contents, guaranteeing the correct specification and the compatibility of reinforcing bar, grout and installation tools required for this application.

Stainless steel helical bars are chemically bonded into horizontal slots cut in bed joints which stitch across the crack. When installed, these bars evenly redistribute tensile forces over the reinforced area to stabilise the structure. On completion, the bars and the grout are concealed, retaining the original character of the wall.

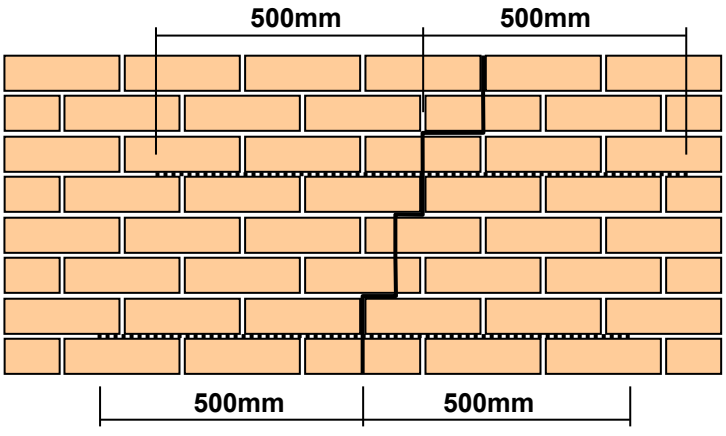
Cracks are repaired with no further damage to the wall, no costly or lengthy re-construction work and no inconvenience to the building's inhabitants.

RECOMMENDED EQUIPMENT (NOT INCLUDED)

- Twin-bladed diamond-tipped wall chaser with vacuum attachment
- Three-jaw chuck power drill
- Personal protection equipment – gloves, eye wear and dust mask

APPLICATION GUIDANCE

WALL THICKNESS	SLOT DEPTH	HELICAL BAR DEPTH
102mm	30mm	20mm
215mm	40mm	30mm



TECHNICAL SUPPORT

Call +44 (0) 114 238 1238 for technical advice or contact your local Staifix-Thor Helical distributor.

IMPORTANT

It is essential that the cause of the cracking is established by a structural engineer and then eliminated, prior to the installation of this system.

SURFACE PREPARATION

1. Proposed substrate must be sound.
2. Substrate surfaces to be bonded must be clean and free from oils, organic growth, dust and debris. The substrate must be wetted and in a moist condition. Standing water to be avoided.
3. In hot conditions and porous substrates ensure the masonry is well wetted before AND after grout application. To wet the substrate after grout application use wetted hessian over the works.
4. If wetting proves ineffective, prime the substrate to prevent premature curing of the grout.

STEP-BY-STEP INSTALLATION GUIDANCE

1. Cut a slot in the mortar joint to the specified depth that extends just over 500mm each side of the crack (recommended equipment: Twin-bladed diamond-tipped wall chaser). Ensure the mortar is completely removed to reveal the top and bottom faces of the masonry. Prepare surface for grout (see 'Surface Preparation' above).

2. Connect the paddle to a power drill, blend the components of the grout together in the tub and load into the gun. Apply a continuous bead (approximately 10-15mm thick) to the back of the slot.

3. Push the helical bar into the face of the grout, to the depth specified, so that the bar extends 500mm each side of the crack.

4. Apply a second, continuous bead of grout to the slot, ensuring the bar is covered. With the finger trowel force the grout back into the slot 10mm from the surface, and ensure the bar/grout composite is tightly packed.

5. Make good the bed joint and fill the vertical crack with an appropriate filler or mortar.

NOTES

This system is suitable for conventional brickwork and rendered/plastered walls. Vertical spacing is normally every 4 to 6 brick courses (300 - 450mm), however this should be checked with the structural engineer. Where cracks are within 500mm of corners or reveals, the bar should be bent and bonded 100mm around the corner. If two or more cracks are close together, bars can be lapped. Laps should be at least 500mm and the bar should extend 500mm from the outer cracks.

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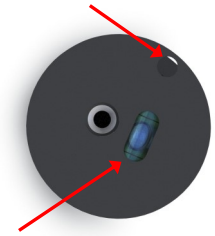
Method Statement
STAIFIX-THOR HELICAL SUPER-7 WARM ROOF NAILS

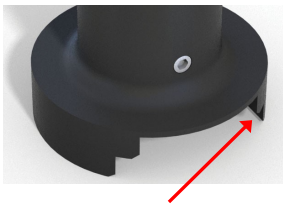
The Super-7 Alignment Tool (Patent Pending)
Only for use with Staifix-Thor Helical Super-7 warm roof nails

The innovative Super-7 Alignment Tool vertically aligns the nail on the counterbatten to rafter arrangement.

Eyelet, to allow tool to be secured to person/structure



Top, with level to identify a vertical plane



Bridge, in two sizes to accommodate different widths of counterbatten

Method Statement

Fixings should be installed through the centre of the counterbatten, pass through the insulation layer and penetrate squarely into the centre of the rafter's upper face.

- Ensure the counterbatten is positioned directly above the rafter
- Apply body weight to the counterbatten to ensure it is held tightly against the insulation
- Either work from one end of the counterbatten to the other or from the middle and out. Never fix at both ends and work into the middle
- Grip the barrel of the tool and locate the appropriately-sized bridge on the counterbatten. Adjust the tool's seating according to the levelling indicator (air bubble to be central) to align the fixing to a vertical plane

  Upper bridge = 38mm counterbatten
  Lower bridge = 50mm counterbatten
- Maintaining this position, hammer the fixing flush to the top of the tool using either a conventional hammer or an SDS adapter fitted to a hammer drilling machine
- Remove the tool and continue to drive the fixing until it is flush with the top of the counterbatten
- Fix the remaining nails at the calculated centres

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INSTALLATION GUIDE

AC31 / AC31C REMEDIAL

1. Using a 10mm masonry drill bit, drill a hole into the inner leaf of masonry to a depth of 60mm (if the inner leaf is blockwork, the hammer action should be turned off).

2. Ensure both holes are free from debris using either brush or blow bulb.

3. Check the cavity width at regular intervals to ensure the correct tie length is used.

4. Fit a FIS VL 410 C resin cartridge into a resin gun and fix the supplied mixing nozzle. Depress the trigger until the resin passes through the mixing nozzle. Continue until the resin comes out an even grey colour and release the pressure.

5. Insert the nozzle to the back of the prepared hole in the inner leaf. Activate the trigger and completely fill the hole in the inner leaf. Release the pressure on the resin gun to avoid wastage.

6. Insert the tie into the resin ensuring it is pushed all the way to the back of the hole.

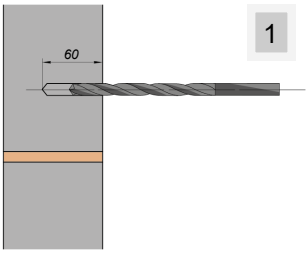
7. Allow the resin to cure.

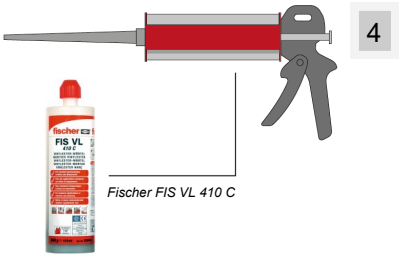
8. Build into the outer masonry at the specified spacing (by Engineer). Wall ties should be pressed down into fresh mortar. They should be surrounded by mortar and not simply positioned directly onto masonry with mortar placed around them.

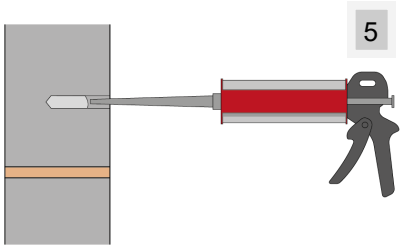
9. Ensure the drip part of the tie points downward (AC 31C only) and positioned towards the centre of the open cavity.

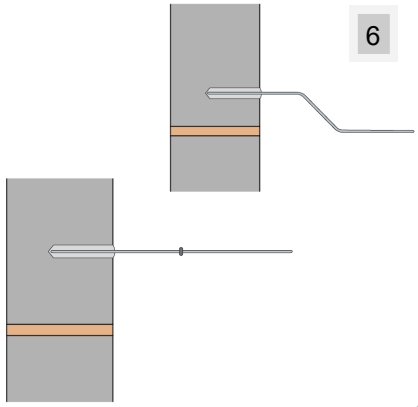
10. Where a tie is supplied with an 'O-ring', this should be moved along the shank of the tie to the centre of the open cavity.

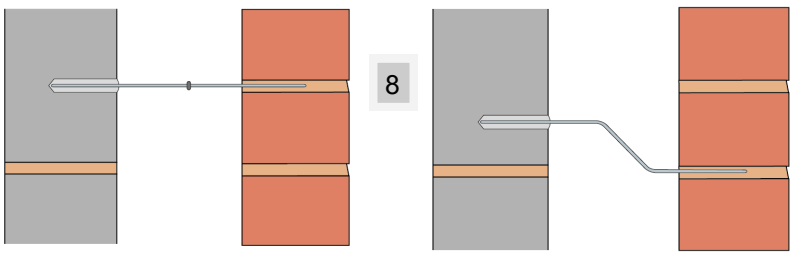
Note: Installed wall ties should be clear of mortar droppings to allow the drip to function and prevent water from crossing to the inner leaf of masonry.

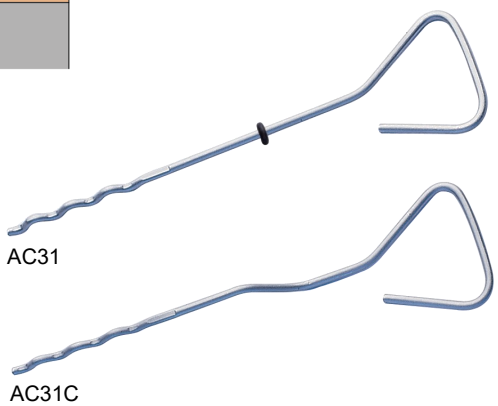












A plastic sieve may be used to retain resin and is particularly useful in perforated brick or hollow blockwork. A 12mm hole is required to fit the sieve.

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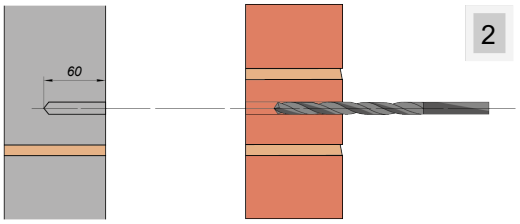
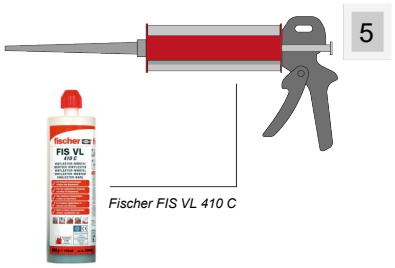
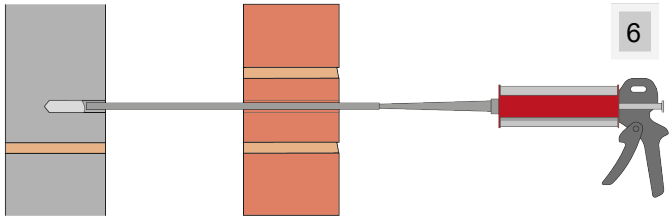
INSTALLATION GUIDE

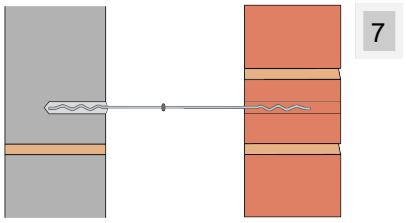
STAIFIX R/R REMEDIAL WALL

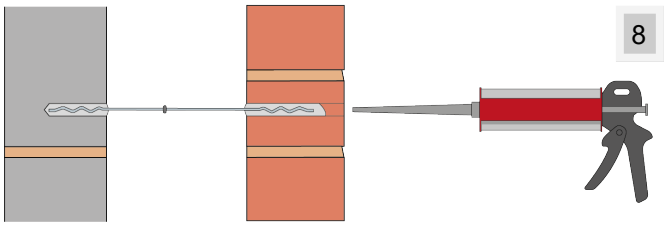


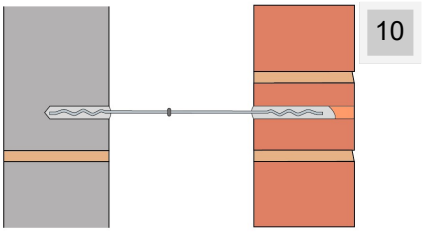


1. Using a 10mm masonry drill bit, drill through the external leaf (with drill angled slightly upward) until you reach the cavity void.
2. With the tip of the drill bit touching the inner leaf, set the depth gauge on the drill to 60mm. Drill a hole into the inner leaf to a depth of 60mm (if the inner leaf is blockwork, the hammer action should be turned off).
3. Ensure both holes are free from debris using either brush or blow bulb.
4. Check the cavity width at regular intervals to ensure the correct tie length is used.
5. Fit a FIS VL 410 C resin cartridge into a resin gun and attach an extension nozzle to the standard mixing nozzle supplied. Depress the trigger until the resin passes through the mixing nozzle. Continue until the resin comes out an even grey colour and release the pressure.
6. Insert the extended nozzle to the back of the prepared hole in the inner leaf. Activate the trigger and completely fill the hole in the inner leaf. Release the pressure on the resin gun to avoid wastage.
7. Insert the tie into the resin ensuring it is pushed all the way to the back of the hole.
8. Remove the extended nozzle and fill the aperture in the external leaf around the tie using the standard nozzle, ensuring the tie is completely surrounded by resin.
9. Allow the resin to cure.
10. Make good the outer brick using colour matched mortar or mastic (resin manufacturer's technical data should be checked for exact gel time).









NOTE: A plastic sieve may be used to retain resin and is particularly useful in perforated brick or hollow blockwork. A 12mm hole is required to fit the sieve.

Staifix R/R Range

Cavity Width (mm)	Tie Length (mm)
40-60	180
61-80	200
81-100	220

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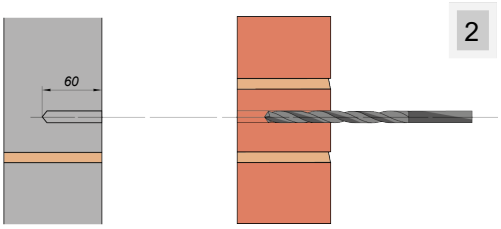
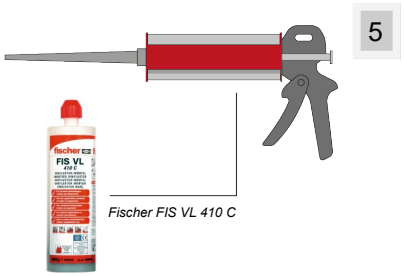
INSTALLATION GUIDE

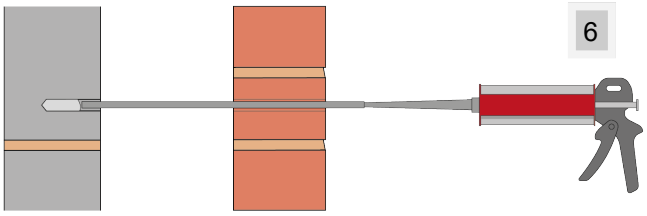
STAIRIB BAR REMEDIAL

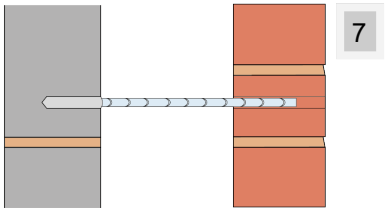
1. Using a masonry drill bit of the correct diameter [see table below], drill through the external leaf (with drill angled slightly upward) until you reach the cavity void.
2. With the tip of the drill bit touching the inner leaf, set the depth gauge on the drill to 60mm. Drill a hole into the inner leaf to a depth of 60mm (if the inner leaf is blockwork, the hammer action should be turned off).
3. Ensure both holes are free from debris using either brush or blow bulb.
4. Check the cavity width at regular intervals to ensure the correct tie length is used.
5. Fit a FIS VL 410 C resin cartridge into a resin gun and fix an extension nozzle to the standard mixing nozzle supplied. Depress the trigger until the resin passes through the mixing nozzle. Continue until the resin comes out an even grey colour and release the pressure.
6. Insert the extended nozzle to the back of the prepared hole in the inner leaf. Activate the trigger and completely fill the hole in the inner leaf. Release the pressure on the resin gun to avoid wastage.
7. Insert the tie into the resin ensuring it is pushed all the way to the back of the hole.
8. Remove the extended nozzle and fill the aperture in the external leaf with the standard nozzle, ensuring the tie is completely surrounded by resin.
9. Allow the resin to cure.
10. Make good the outer brick using colour matched mortar or mastic (resin manufacturer's technical data should be checked for exact gel time).

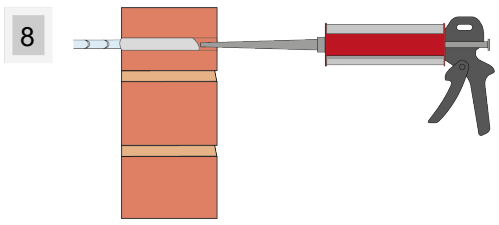
Note: A plastic sieve may be used to retain resin and is particularly useful in perforated brick or hollow blockwork. A 12mm hole is required to fit the sieve.











Hole Diameter

Stairib Bar Diameter (mm)	Hole Diameter (mm)
6	10
8	12

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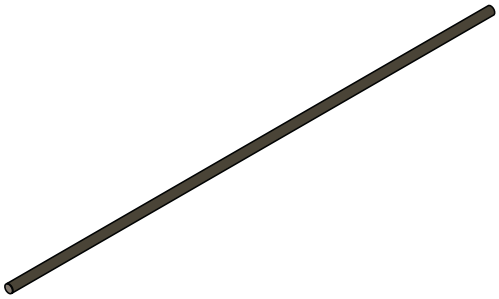
Installation Guide

TeploTie2 Remedial Wall Tie

This plain-ended basalt fibre wall tie can be resin-fixed in remedial and retrofit applications. This tie has a thermal conductivity of only 0.7W/mK when used without a stainless steel sieve.



INSTALLATION PROCEDURE

1. Using a masonry drill bit of the correct diameter (see table below), drill through the external leaf (with drill angled slightly upward) until you reach the cavity void.

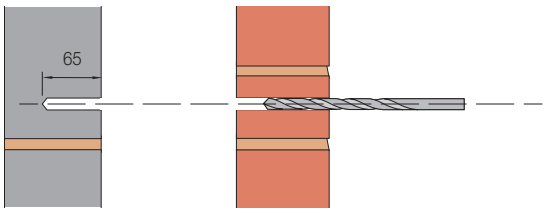
TeploTie2 Range

Cavity Widths (mm)	Tie Lengths (mm)	TeploTie2 Diameter (mm)	Hole Diameter (mm)
126-200	275, 300, 325	6	8
201-300	350, 375, 400, 425	7	10

Note: For applications outside those shown above, please contact Ancon.

2. With the tip of the drill bit touching the inner leaf, set the depth gauge on the drill to 65mm. Drill a hole into the inner leaf to a depth of 65mm (if the inner leaf is blockwork, the hammer action should be turned off).

2.

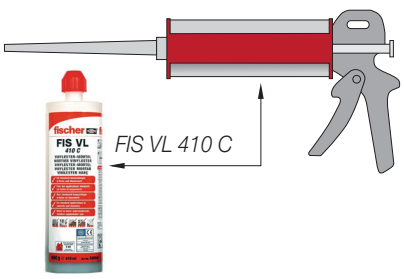


3. Ensure both holes are free from debris using either brush or blow bulb.

4. Check the cavity width at regular intervals to ensure the correct tie length is used (see table above for guidance).

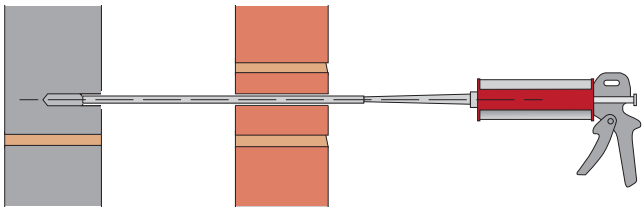
5. Fit a FIS VL 410 C resin cartridge into a resin gun and fix an extension nozzle to the standard mixing nozzle supplied. Depress the trigger until the resin passes through the mixing nozzle. Continue until the resin comes out an even grey colour and release the pressure.

5.



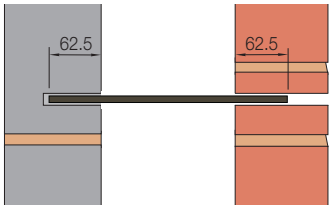
6. Insert the extended nozzle to the back of the prepared hole in the inner leaf. Activate the trigger and completely fill the hole in the inner leaf. Release the pressure on the resin gun to avoid wastage.

6.



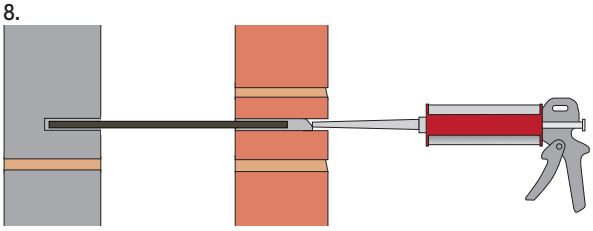
7. Insert the TeploTie2 into the resin ensuring it is pushed all the way to the back of the hole. Ensure the tie achieves a minimum embedment depth of at least 62.5mm in each leaf.

7.



8. Remove the extended nozzle and fill the aperture in the external leaf with the standard nozzle, ensuring the tie is completely surrounded by resin.

8.



9. Allow the resin to cure.

10. Make good the outer brick using colour matched mortar or mastic (resin manufacturer's technical data should be checked for exact gel time).

Note: A stainless steel sieve may be used to retain resin and is particularly useful in perforated brick or hollow blockwork. A 12mm hole is required to fit the sieve.

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March 2019

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INSTALLATION GUIDE

TEPLO-BFR REMEDIAL

The Teplo-BFR is a low thermal conductivity wall tie manufactured from basalt-fibres that features a plain end for resin anchoring into an existing structure and a moulded safety end for building into a new bed joint. This tie has a thermal conductivity of only 0.7W/mK when used without a stainless steel sieve.

INSTALLATION PROCEDURE

1. Using a 10mm masonry drill bit, drill a hole into the existing structure to a depth of 65mm (if the inner leaf is blockwork, the hammer action should be turned off).

2. Ensure hole is free from debris using either brush or blow bulb.

3. Fit a FIS VL 410 C resin cartridge into a resin gun and fix the supplied mixing nozzle. Depress the trigger until the resin passes through the mixing nozzle. Continue until the resin comes out an even grey colour and release the pressure.

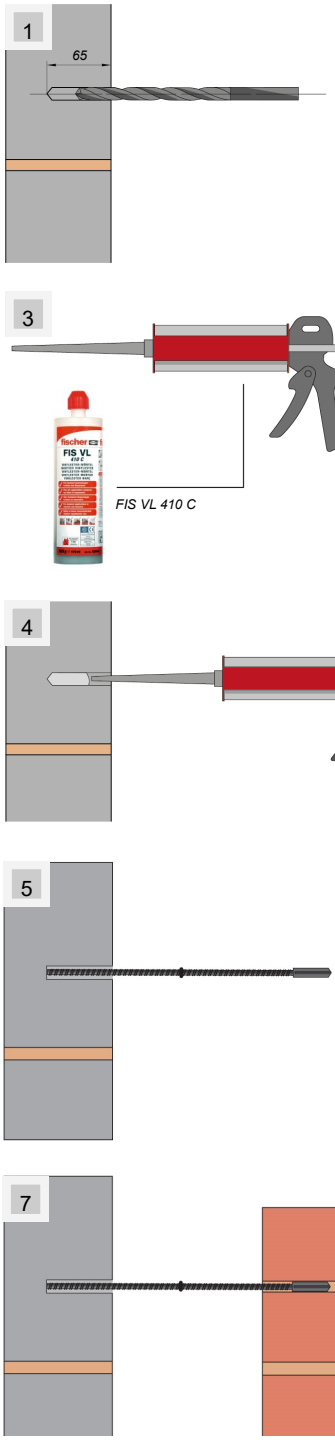
4. Insert the nozzle to the back of the prepared hole in the existing structure. Activate the trigger and completely fill the hole in the inner leaf. Release the pressure on the resin gun to avoid wastage.

5. Insert the plain end of the tie into the resin ensuring it is pushed all the way to the back of the hole.

6. Allow the resin to cure.

7. Build into the bed joints of the new masonry leaf at the specified spacing (by Engineer). Wall ties should be pressed down into fresh mortar. They should be surrounded by mortar and not simply positioned directly onto masonry with mortar placed around them.

8. Ensure the high-integrity rubber ‘O-ring’ moisture drip is moved along the shank of the tie to the centre of the open cavity.



Notes: Check the cavity width and embedment depth in the new masonry leaf at regular intervals to ensure the correct tie length is being used. Recommended design embedment for the built-in end is 62.5mm to 75mm. On site minimum embedment, taking all site tolerances into account is 50mm. Longer ties will be required if the minimum embedment cannot be achieved on site.

Installed wall ties should be clear of mortar droppings to allow the drip to function and prevent water from crossing to the inner leaf of masonry.

A stainless steel sieve may be used to retain resin and is particularly useful in perforated brick or hollow blockwork. A 12mm hole is required to fit the sieve.

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Installation Guide
MM63 REMEDIAL WALL TIE
MECHANICAL/MECHANICAL

1. Using an 11mm masonry drill bit, drill a hole through the outer leaf (with drill angled slightly upward) until you reach the cavity void.

2. With the tip of the drill touching the inner leaf, set the depth gauge on the drill to 70mm. Drill a hole in the inner leaf to a depth of 70mm (if the inner leaf is blockwork, the hammer action should be turned off).

3. Ensure both holes are free from debris using either brush or blow bulb.

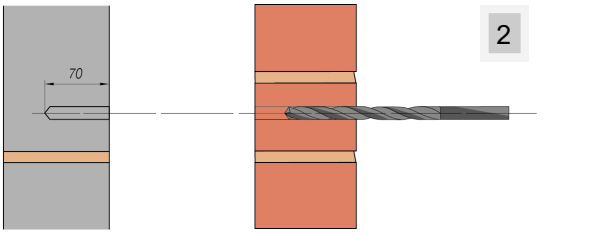
4. Check the cavity width at regular intervals to ensure the correct tie length is used.

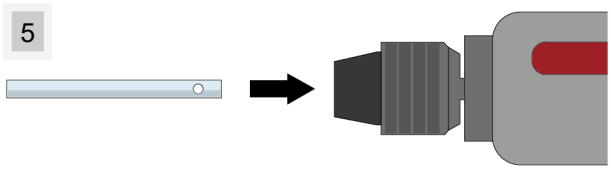
5. Using a cordless driver, insert the setting tool into the chuck and tighten. Set the clutch torque to ¾ of maximum (for a 14.4V cordless driver).

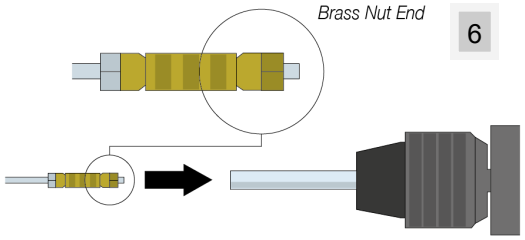
6. Put the tie into the end of the setting tool (brass nut end).

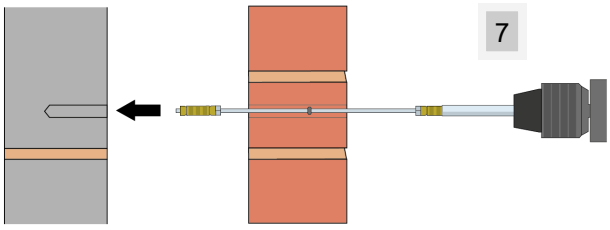
7. Push the tie into the hole and all the way to the back of the hole in the inner leaf.

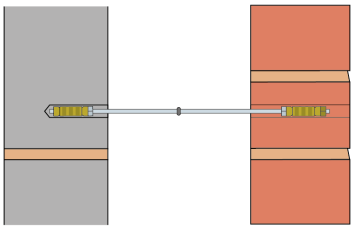
8. At half speed activate the cordless driver. When driver clutch disengages, the tie is set.











Ancon 63 Range

Cavity Width (mm)	Tie Length (mm)	Drill Diameter (mm)	Drill Depth (mm)
35 - 60	200	11	70 - 75
61 - 85	225	11	70 - 75
86 - 110	250	11	70 - 75
135 - 160	300	11	70 - 75

Notes:

- For cavities in the range 111mm to 134mm Ancon recommends a Resin/Resin tie.
- Ties should not be positioned less than 10mm from the weather side of the outer leaf.
- Minimum embedment to the inner leaf is 70mm.

Failure Loads (Pull-Out) for the Ancon 63 Range

Base Material	Failure Load (kN)
Stock or Accrington Brick	3.3
Common Brickwork	3.0
Dense Concrete Blockwork	2.6
Lightweight Concrete Blockwork	2.1
40N Concrete	3.2
30N Concrete	2.9

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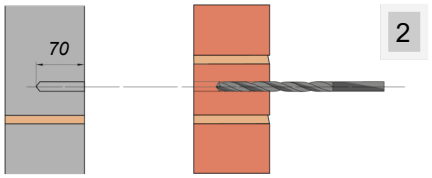
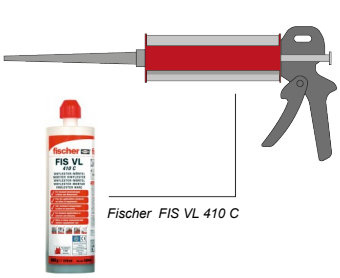
INSTALLATION GUIDE

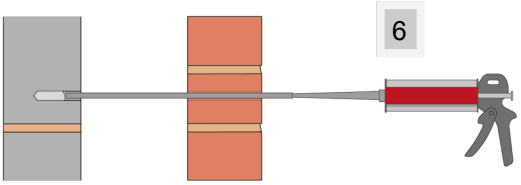
RM63 REMEDIAL WALL TIE

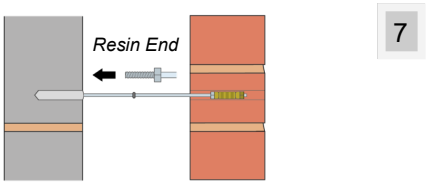
RESIN/MECHANICAL

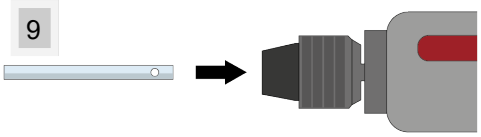
1. Using a 11mm masonry drill bit, drill a hole through the outer leaf (with drill angled slightly upward) until you reach the cavity void.
2. With the tip of the drill touching the inner leaf, set the depth gauge on the drill to 70mm. Drill a hole in the inner leaf to a depth of 70mm (if the inner leaf is blockwork, the hammer action should be turned off).
3. Check the cavity width at regular intervals to ensure the correct tie length is used.
4. Ensure both holes are free from debris using either brush or blow bulb. Ensure both leaves of masonry are dry.
5. Fit a FIS VL 410 C resin cartridge into a resin gun and fix the standard nozzle supplied. Depress the trigger until the resin passes through the mixing nozzle. Continue until the resin is an even colour and release the pressure. Attach the extension nozzle.
6. Insert the extended nozzle to the back of the hole in the inner leaf. Activate the trigger and fill the hole in the inner leaf. Release the pressure on the resin gun to avoid wastage.
7. Insert the resin end of the tie into the resin ensuring it is pushed all the way to back of the hole.
8. Allow the resin to cure.
9. Using a cordless driver, insert the setting tool into the chuck and tighten. Set the clutch torque to ¾ of maximum (for a 14.4V cordless driver).
10. Push the setting tool on to the tie (brass nut end).
11. At half speed activate the cordless driver. When driver clutch disengages, the tie is set.

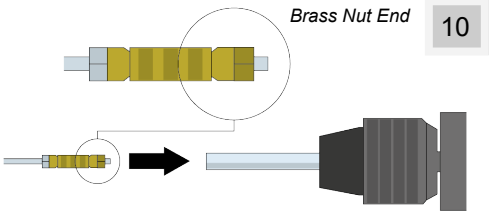


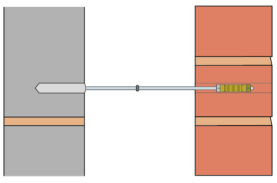












Ancon 63 Range

Cavity Width (mm)	Tie Length (mm)	Drill Diameter (mm)	Drill Depth (inner leaf) (mm)
35 - 60	200	11	70 - 75
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Installation Guide
Ancon Tension Systems

The following instructions are vital to ensure a full strength system. Appropriate material end plates should be used to ensure system performance (see 'Connecting Plates' section).

Inspection of Product Components

Transit Damage
All tension system components should be visually inspected for transit damage prior to installation. Special care should be taken when inspecting bars and threaded areas as significant damage could affect the capacity of the system. Thread distortion will cause fittings to jam over thread.

Component surface damage, including scuffing and scratching, should be treated by either polishing for stainless steel or repair coating treatments for zinc/galvanised bars. With regards to the latter, this is important to maintain system corrosion protection.

Thread Orientation
Threaded components are either right hand or left hand oriented. It is important to identify thread orientation prior to assembly, to avoid mismatching components. All fittings are stamped with either 'R' or 'L' to indicate hand of thread.

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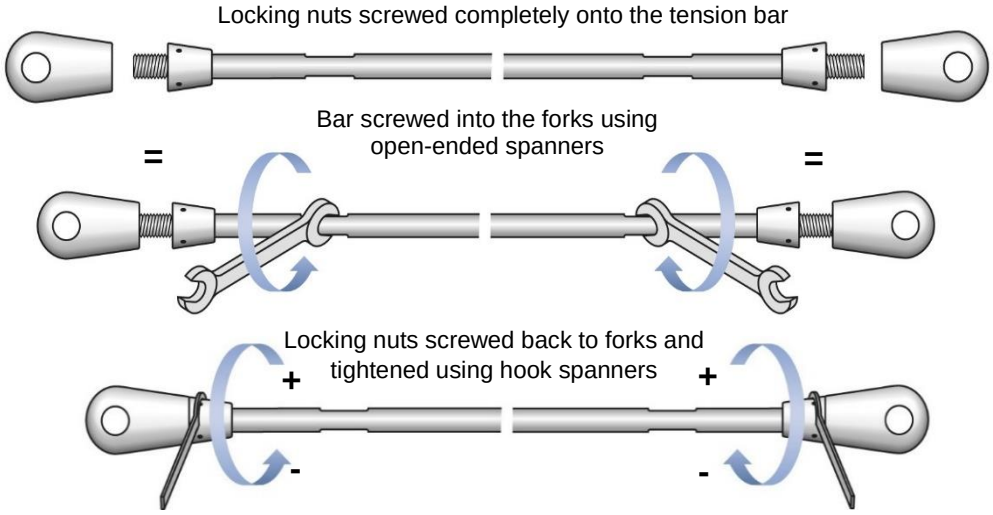
Assembly and Adjustment of the System

All bars and relevant fittings should be separated and identified per work area, to avoid misplacing bar lengths or sizes. It is advisable to assemble tension bars on the ground first, without pins, before lifting into position over the connecting plates.

Installation Guidance

1. On a level surface as close as possible to the final fixing location, assemble the full system, without pins, to the required pin-to-pin dimension. To do this the locking nuts should be fully screwed onto the bar at each end and the bar screwed into the forks, ensuring full thread engagement, using an open-ended spanner of the correct size (see page 4 for spanner sizes).

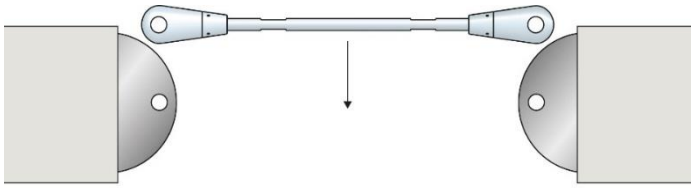
   When the required system length is reached, the locking nuts must be turned back to the fork and tightened using soft touch pliers for Ancon 500/8 to 12, or a hook spanner for Ancon 500/16 and above, and the Ancon 360 System.



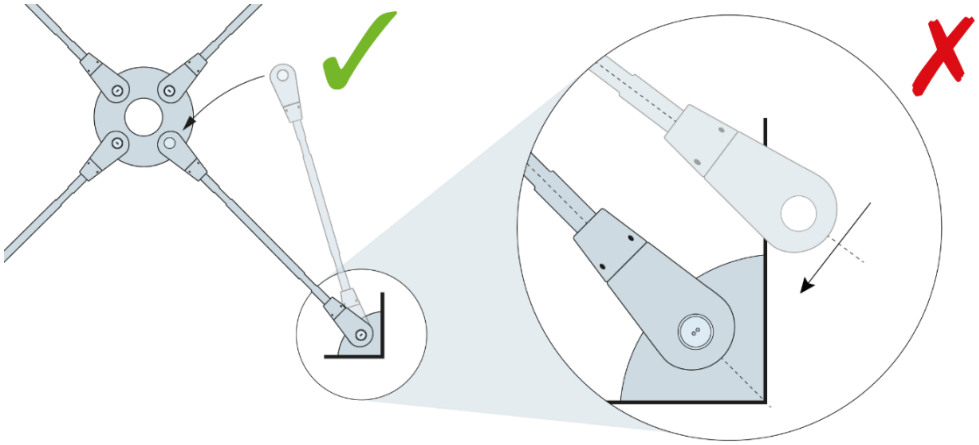
   No thread should be visible past the locknut. To make adjustments to the length of the system, to achieve a specific pin-to-pin dimension, unscrew couplers (if used) and then unscrew fork ends. Ensure adjustment is distributed along all adjustable components to make certain no thread is showing across the entire assembly.

Couplers
Where couplers are used, please note that each end of the coupler has different thread directions. Match both the right hand and left hand stamps on the coupler with the relevant thread ends of the tension bars. Completely screw coupler onto first bar until it reaches centre stop location, then completely screw other bar into coupler. Bars should butt up against each other and should be engaged approximately half the length of the coupler each.

2. The full assembly should be lifted over one connecting plate, avoiding excessive sag by using lifting equipment or temporary props as appropriate. Secure the system in place with the pin. Repeat the process at the other connecting point.

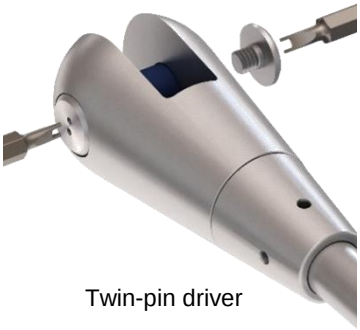


In systems that have a disc, the bars should be installed in a sequence so that the fork towards the disc is installed last.



Installing the pin

Installation of the pin requires a special driver suitable for 'Snake Eyes'* fixings. Two driver bits of the appropriate size are supplied with each Ancon system. The female section of the pin is located through the fork connector and temporarily held in position. A second driver is used to wind the male section into position creating a secure connection. Once installed the pins are slightly recessed into the fork.



Twin-pin driver

'Snake Eyes' is the registered trademark of Tamperproof Screw Company Inc

3. Final adjustment/tensioning of bars can now take place. Adjustment should be shared between components to ensure adequate bar engagement throughout the system. Tighten the locknuts against fork ends (and couplers if used), ensuring no threads are visible, to complete the installation. See table for level of adjustment provided and see 'Corrosion Protection' for final sealing guidance.

When the installation is complete, all threads must be hidden within the locking nut. If the thread is visible, the bar is not sufficiently engaged in the fork and would need to be adjusted.

Incorrect installation with thread exposed

Correct installation with no threads visible

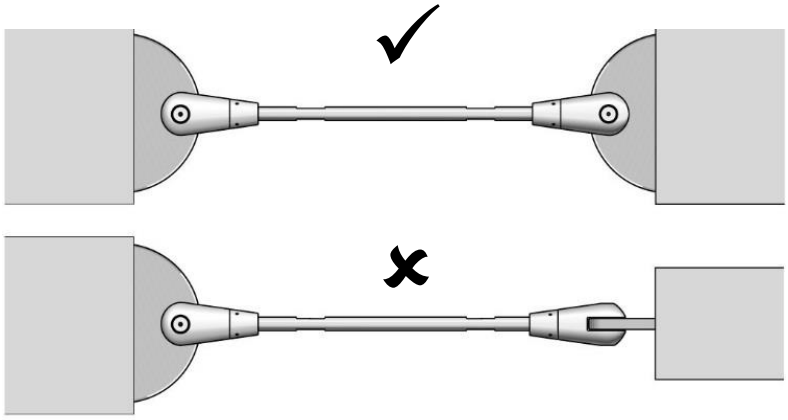
General Guidance

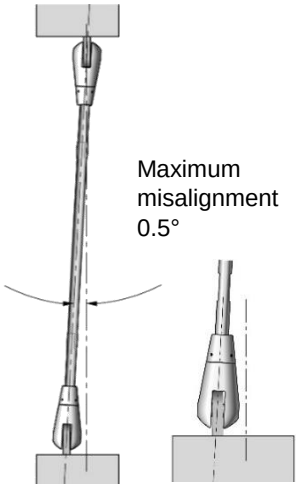
Adjustment per thread end/bar size

Thread Size (M)	8	10	12	16	20	24	30	36	42	48	56
Fork Adjustment (mm)	9	10	13	15	16	22	25	28	30	35	45
Coupler Adjustment (mm)	9	10	13	15	16	22	25	28	30	35	45

Fork Connector Alignment

Forks must be correctly aligned, and positioned in the same plane to ensure that bending is not introduced into the tension system.





Connecting Plates

All connection plates should be manufactured from either S355 carbon steel or grade 1.4462 stainless steel to ensure system performance; equivalent strength materials could also be used. See Ancon's 'Tension and Compression Systems' technical brochure for minimum critical dimensions.

Spanner Size

Thread Size (M)	8	10	12	16	20	24	30	36	42	48	56
Spanner Size (mm A/F)	13	17	19	30	36	46	55	65	75	85	95

Dissimilar Metals Isolation

Each stainless steel fork connector is supplied with two clear, self-adhesive, PET (polyester) washers to isolate the system from a connecting plate of a dissimilar metal. These washers should be applied around the fixing hole, either side of the plate, prior to the installation of the fork. The area should be dry, free from debris and wiped clean, prior to the application of the washer.

Stainless steel pins feature a PTFE coating around the barrel to isolate it from the plate.

Corrosion Protection

Electrodeposited zinc coating (Fe/Zn12/A to EN 12329) will provide protection against corrosion but should only be used for internal installations and will naturally degrade over time. Hot-dip galvanising (to EN 1461) will provide greater protection and could be used outdoors considering environment corrosivity. Stainless steel systems offer the greatest corrosion protection.

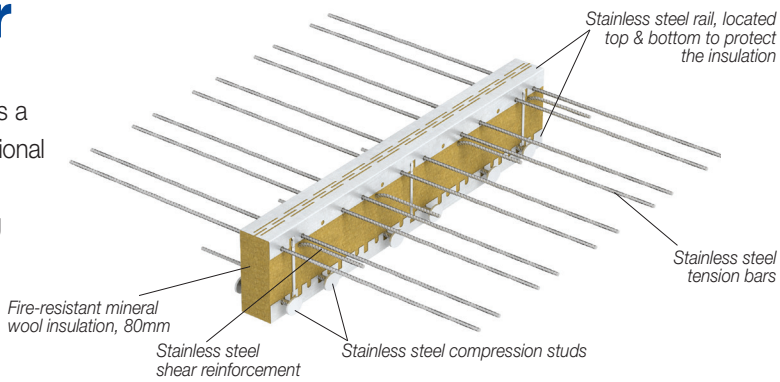
Regardless of system material, it is recommended to seal off locknuts with an appropriate industrial sealant to ensure water and debris do not seep into the bar thread through the void between bar and locknut. This is particularly important for vertical and inclined assemblies.

Installation Guide

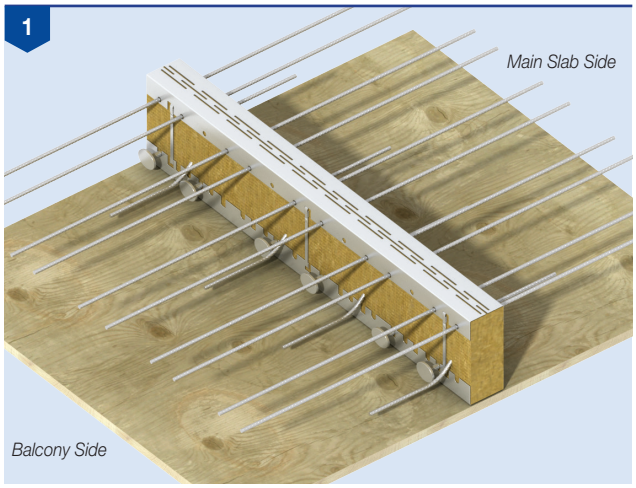
January 2020

Ancon Isotec Concrete-to-Concrete Balcony Connector

Ancon Isotec balcony connectors are manufactured as a non-deformable cage offering high rigidity and dimensional stability. Prior to installation, ensure all Isotec elements have not been damaged during transit or site handling and that they correspond to the project specification.

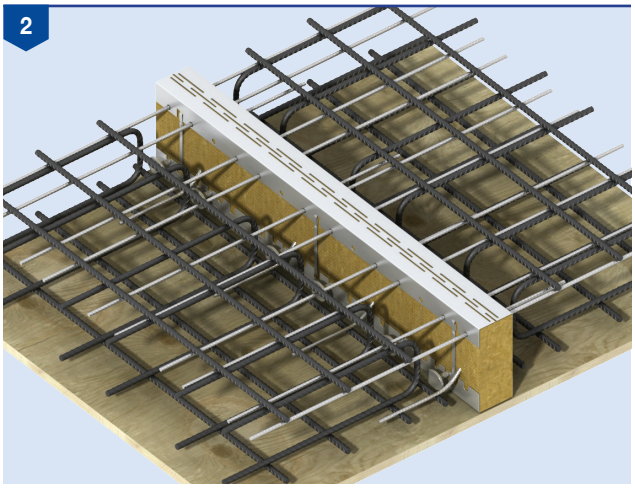


1



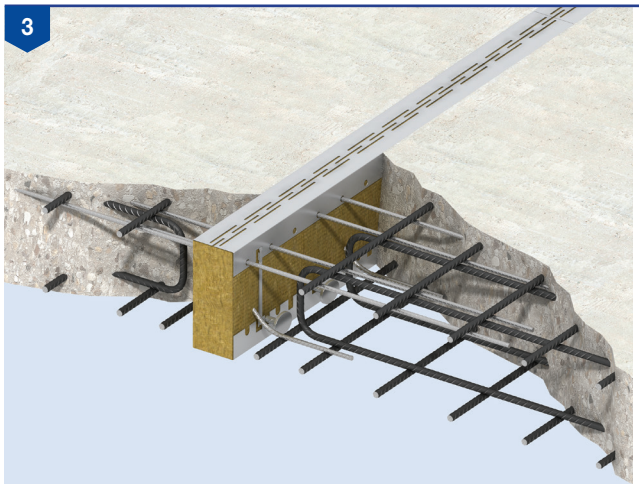
Place the Isotec system on the formwork in line with the project drawings, ensuring all Isotec elements are positioned and orientated as indicated on the product label.

2



Position all necessary local and main reinforcement. Secure each Isotec unit to the slab reinforcement. Any gaps between Isotec elements must be filled with equivalent insulating material.

3



Concrete should be poured adjacent to the Isotec system and simultaneously to either side to avoid any displacement.

Precast Applications

If Isotec elements are used in precast balconies, lifting systems must be positioned within the gaps between Isotec elements. Ensure the compression studs do not apply pressure on an internal structure already in position.

Contact Ancon immediately if you have any questions regarding correct installation.

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Installation Guide

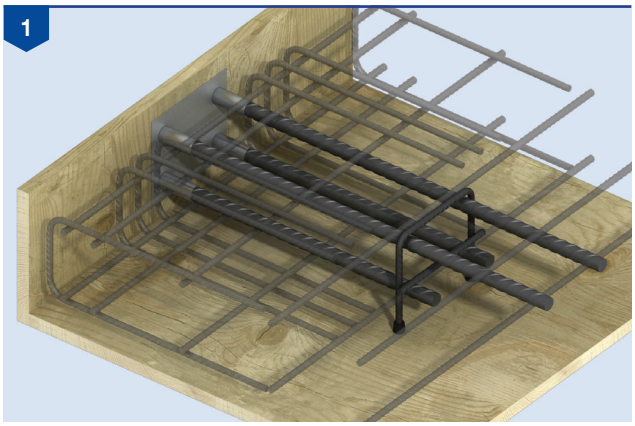
January 2020

Ancon SSTC/STC Steel-to-Concrete Balcony Connector

Ancon SSTC/STC balcony connectors are quick and easy to install. Allowing for phased construction, the system consists of two components: a cast-in anchorage and a fabricated bracket with thermal plate.

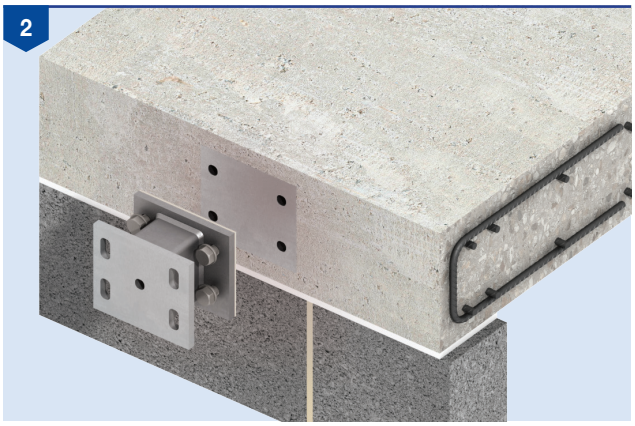
Scan the code to watch an installation video.

Cast-in Anchorage



Nail the assembly to the formwork. The end of the reinforcement cage should be supported on spacers or tied to adjacent slab reinforcement. Fix secondary reinforcement (consult technical literature and project drawings for details) and cast concrete. Allow to cure and strike formwork.

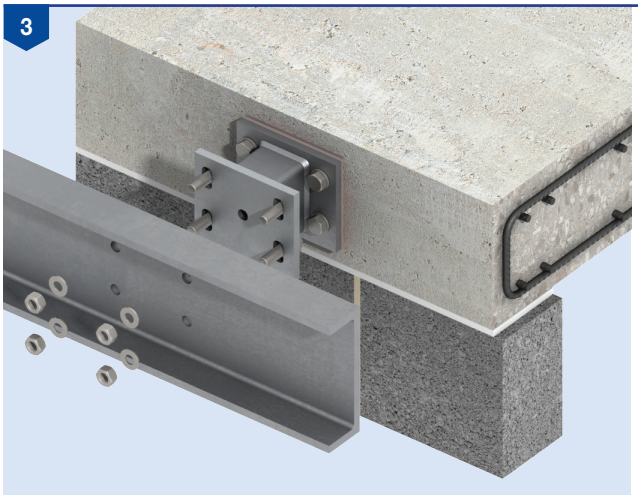
Bracket/Thermal Plate Section



Remove and discard plastic plugs from couplers and nylon nuts from bracket. Offer up thermal plate and then the fabricated bracket. Labels on the connector identify the balcony and concrete slab side, as well as the orientation of the connector. Install the four stainless steel setscrews and washers, and hand tighten. Tighten to the correct torque using a calibrated torque wrench according to the table below. The thermal plate is now sandwiched between the bracket and the concrete.

Connector	Stainless Steel Setscrew	Tightening Torque
SSTC/STC16A	M16, Length 40mm	170Nm
STC20A	M20, Length 50mm	305Nm
STC24A	M24, Length 60mm	530Nm

Balcony



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Offer up the steel balcony and connect to the SSTC/STC bracket with the four galvanised hex head setscrews as follows:

- The top bolts should have the two galvanised square plate washers over the plain slots in the SSTC/STC connector
- The bottom bolts should have the two galvanised serrated washers over the serrated slots in the SSTC/STC connector, orientated to mate and not turned at an angle or installed using the plain side
- Four galvanised washers are provided for the balcony side of the connection, however if the balcony is slotted a plate washer should be used
- The balcony should be levelled vertically using the adjustment provided by the vertical slots in the connector
- In order to guarantee adequate positioning of the balcony steelwork, care must be taken to ensure that the concrete face is vertically level. Should the concrete face be out of plumb, full face tapered shims should be used between the bracket and thermal plate for angular adjustment. Ancon can advise on this if necessary
- Adjustment should not be made between the connector and the thermal break or between the thermal break and the concrete slab edge
- Hand tighten the four connection bolts and then torque using a calibrated torque wrench, referencing the table below:

Connector	Galvanised Hex Head Setscrew	Tightening Torque
SSTC/STC16A	M16, Length 60mm	170Nm
STC20A	M20, Length 75mm	325Nm
STC24A	M24, Length 90mm	565Nm

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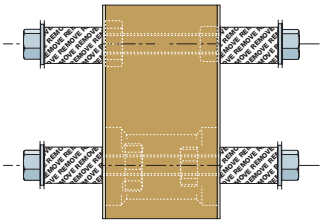
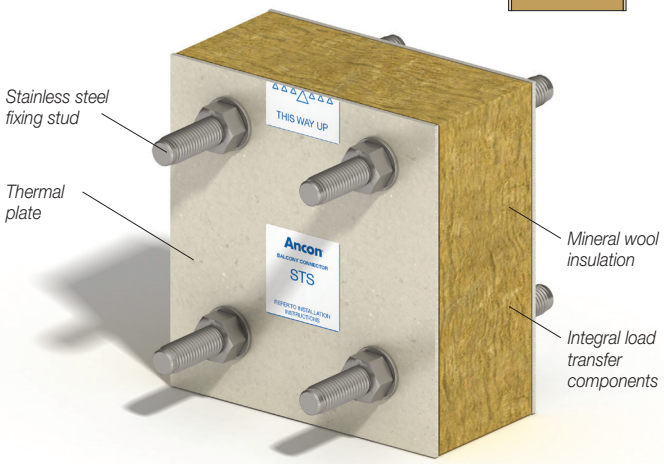
Ancon SSTS/STS Steel-to-Steel Balcony Connector



Ancon SSTS/STS balcony connectors are supplied in single units with thermal plates attached to both inner and outer faces. These plates should not be removed. The assembly features all necessary steel fixings.

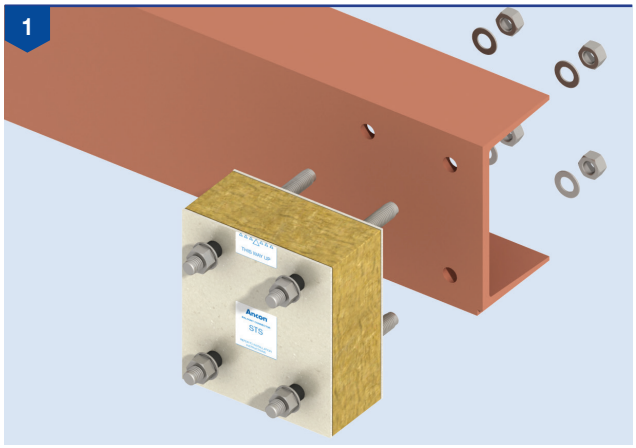
Care should be taken to avoid damaging any balcony connector components prior to and during installation.

It is essential that the connector is orientated and installed correctly.



Pre-installation Checks

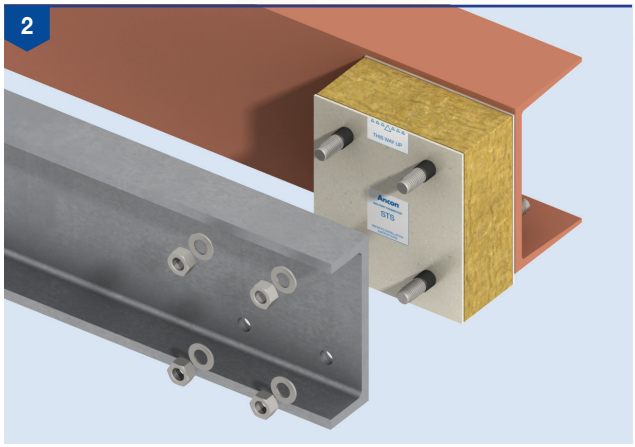
Prior to installation of the connector, it is important to check the product dimensions against the engineer's drawings, specifically ensuring the mating parts match the connector stud centres.



The SSTS/STS Balcony Connector should be orientated so that the label indicating the uppermost face is correctly positioned and is facing out of the building.

Position the connector close to where it is to be installed. Ensure the connector is stable and not likely to fall. Carefully remove the nuts and washers from the studs on the inner face. Keep the steel nuts and steel washers close to hand. All non-metallic packing around the fixings should be discarded at this point, leaving the heat-shrunk isolation material on the stainless steel stud. Carefully lift and fit the exposed studs through the appropriate holes in the building structure. Do not force the connector into position. Re-fit the steel washers and steel nuts. Once the connector is fully aligned with the structure, torque up the nuts with a calibrated torque wrench and suitable socket, referencing the table below.

Connector	SSTS/STS 16A	SSTS/STS 20A	SSTS/STS 24A
Wrench Size (A/F)	24	30	36
Torque (Nm)	148	288	498



Once all connectors are correctly positioned and fitted to the building structure, the balcony beams can be installed.

Remove the nuts and washers from the outer face of the connector and keep close to hand. Discard all non-metallic packing around the fixings to expose the heat-shrunk isolation on the stud.

Carefully lift the balcony fabrication, ensuring the balcony is horizontal. Align the balcony and carefully push over the exposed studs. Do not force it into position.

When positioned, re-fit the steel washers and steel nuts.

Once the balcony is fully aligned with the connector and structure, tighten the nuts to the correct torque. Remove all lifting straps.

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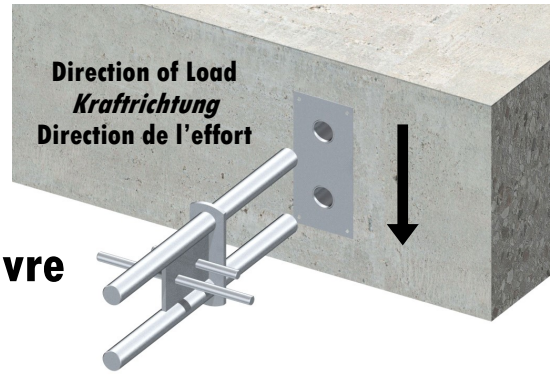
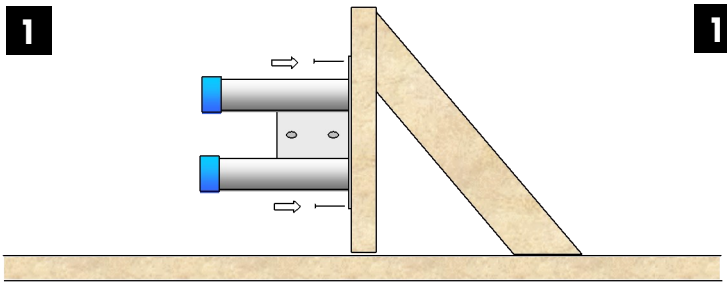
DSD/DSDQ/HLD/HLDQ/ESD/ESDQ



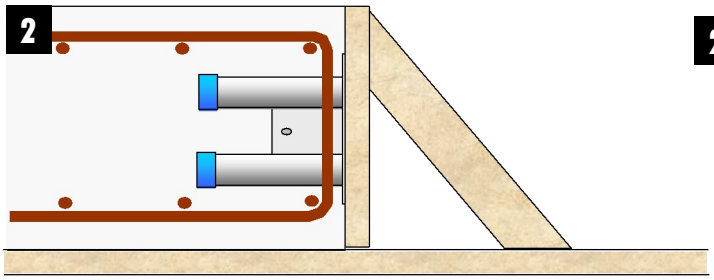
Installation - *Einbauanleitung* - Mise En Oeuvre



1 Nail sleeve to formwork. Do not remove sticky label, this prevents ingress of concrete into the sleeve

Hülse auf die schalung nageln. Kleber nicht entfernen, denn er verhindert ein eindringen von beton in die gleithülse

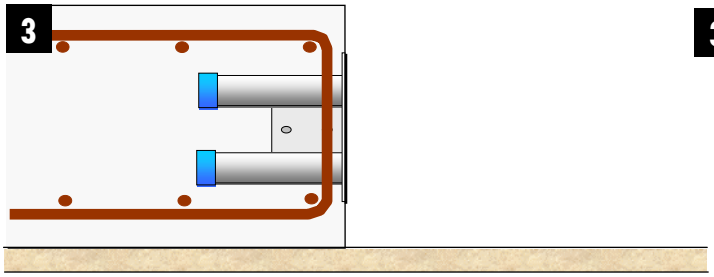
Fixer la douille de glissement au coffrage. Ne pas enlever l'auto-collant de protection, qui permet d'éviter l'introduction de laitance au moment du bétonnage



2 Fix the local reinforcement around the sleeve and pour the concrete

Verlegen der armierung. Bitte die überdeckung beachten. Betonieren

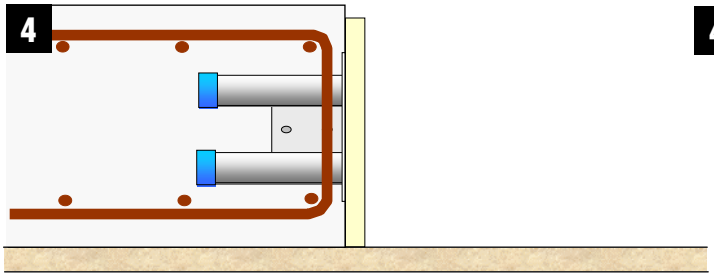
Placer les armatures de renfort autour de la douille de glissement et couler le béton de première phase



3 When the concrete has achieved sufficient strength, strike shuttering and peel off or puncture the label

Ausschalen und kleber entfernen

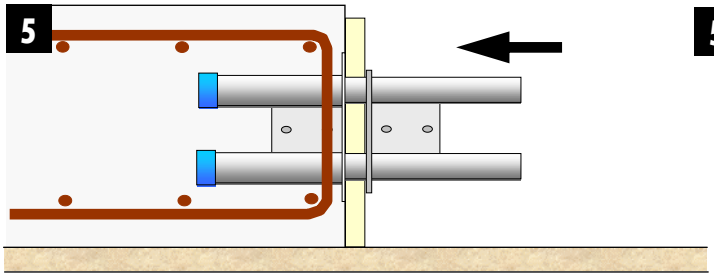
Lorsque le béton de première phase a atteint la résistance adéquate, déposer le coffrage et enlever l'auto-collant de protection



4 Position compressible joint filler

Aufbringen des fugenmaterials

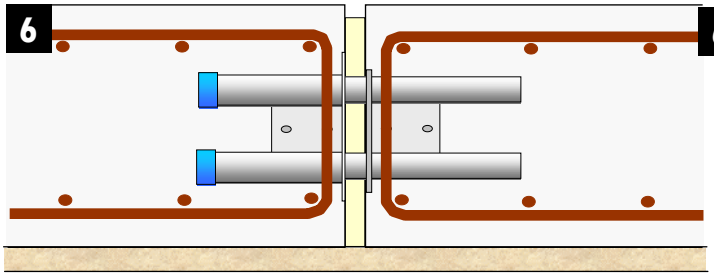
Placer le matériau de joint compressible



5 Push the dowel component through the filler until it is fully located in the sleeve

Einführen des dornteils durch das fugenmaterial

Insérer le goujon dans la douille de glissement jusqu'au contact avec le matériau de joint compressible



6 Fix the local reinforcement around the sleeve and pour the concrete

Ausarmieren und betonieren

Placer les armatures de renfort autour du goujon et couler le béton de deuxième phase

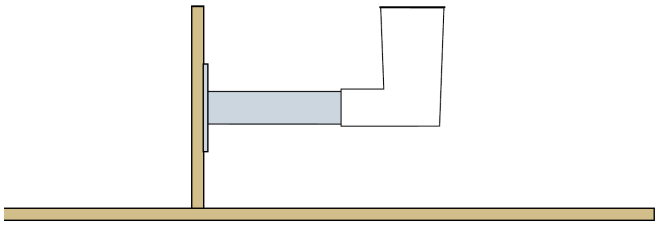
INSTALLATION GUIDE

LOCKABLE DOWELS

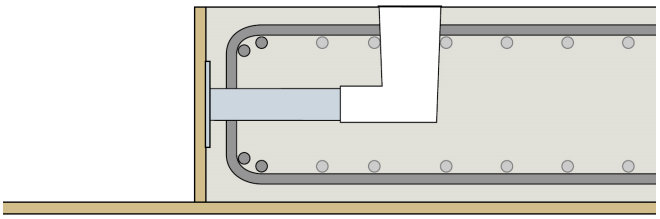
Slab-to-Slab Lockable Dowels

Although installation is shown for the ESDQ-L20, the procedure is the same for the HLDQ-L30.

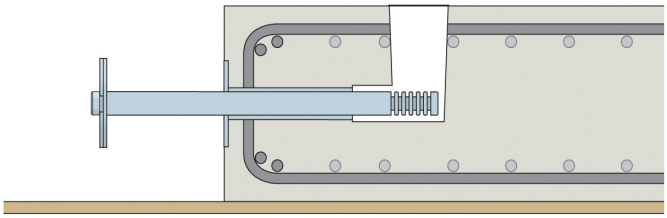
Nail the sleeve to the formwork either central in the slab or for slab depths over 300mm so the top of the void former is level with the top of the slab. Do not remove the label over the nailing plate as this prevents ingress of concrete into the sleeve.



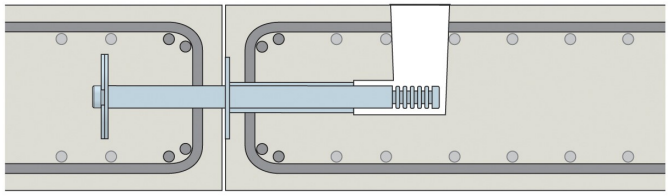
Fix the local reinforcement to Engineer's detail based on Ancon's recommendations. Pour the concrete, and when of sufficient strength, strike the formwork.



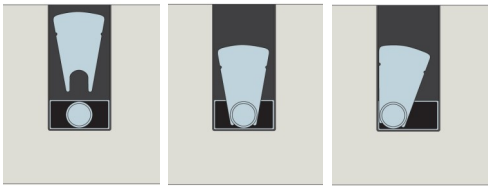
Puncture the label to reveal the cylindrical sleeve only and insert the dowel until it is approximately 20mm from the back of the void former. Ensure the lid is secured to prevent debris from entering the void former.



Fix the local reinforcement around the dowel component and pour the concrete.

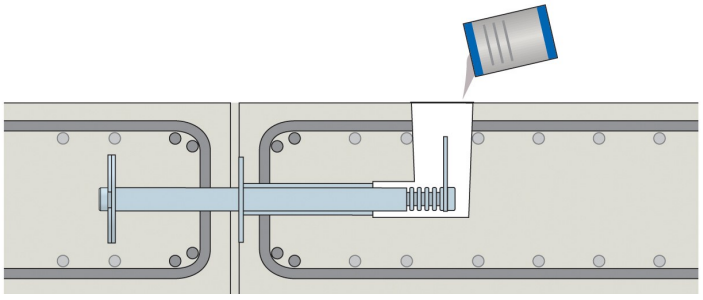


After a predetermined time period (generally 3-4 weeks), when movement between the slabs has stabilised and the joint between the slabs has been filled, the dowel is ready to be locked. Fit the Locking Plate on a groove in the centre of the void former.

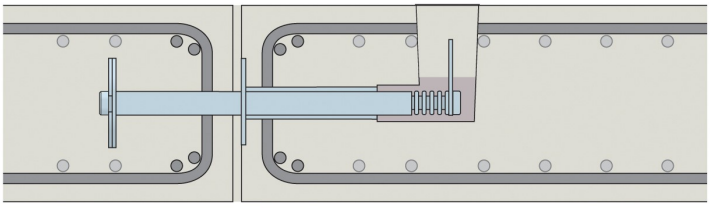


The fan-shaped Locking Plate allows the dowel to be locked in any position.

Mix the two-part epoxy resin and pour into the void former. It is essential the resin flows along the stainless steel box section towards the joint and reaches the notches on the locking plate, which indicate minimum resin depth. Joint must be filled before resin is installed; Ancon can provide information on a suitable joint filler.



After 24 hours the void former can be filled with cementitious material, level with the top of the slab, to complete the installation. The locked dowel continues to transfer vertical load between the slabs, but movement can no longer take place.



Notes: Where deep concrete pours are proposed, the installation will require further consideration. More robust fixing of the sleeve and dowel components will be necessary, to avoid displacement during casting of the concrete. Ensure joint has been filled before pouring resin.

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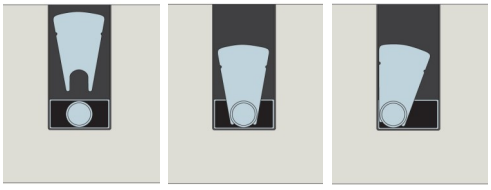
Slab-to-Wall Lockable Dowels

Nail the threaded anchor to the formwork so the dowel will be central in the adjoining slab or within 150mm of the top of slabs over 300mm. Fix the local reinforcement to Engineer's detail based on Ancon's recommendations and cast the concrete. Reinforcement around the Ancon Threaded Anchor should be a minimum diameter of 12mm, installed at maximum 200mm vertical and horizontal centres.

When concrete reaches sufficient strength, strike the formwork and remove nailing plate. Screw the dowel into the anchor. Puncture the label of the sleeve to reveal the cylindrical sleeve only. Push the sleeve over the dowel, until the dowel is approximately 20mm from the back of the void former. Ensure the lid is secured to prevent debris from entering the void former.

Tie sleeve to reinforcement and pour concrete. After a predetermined time period (generally 3-4 weeks), when movement between the slabs has stabilised and the joint between the slabs has been filled, the dowel is ready to be locked. Fit the Locking Plate on a groove in the centre of the void former.



The fan-shaped Locking Plate allows the dowel to be locked in any position.

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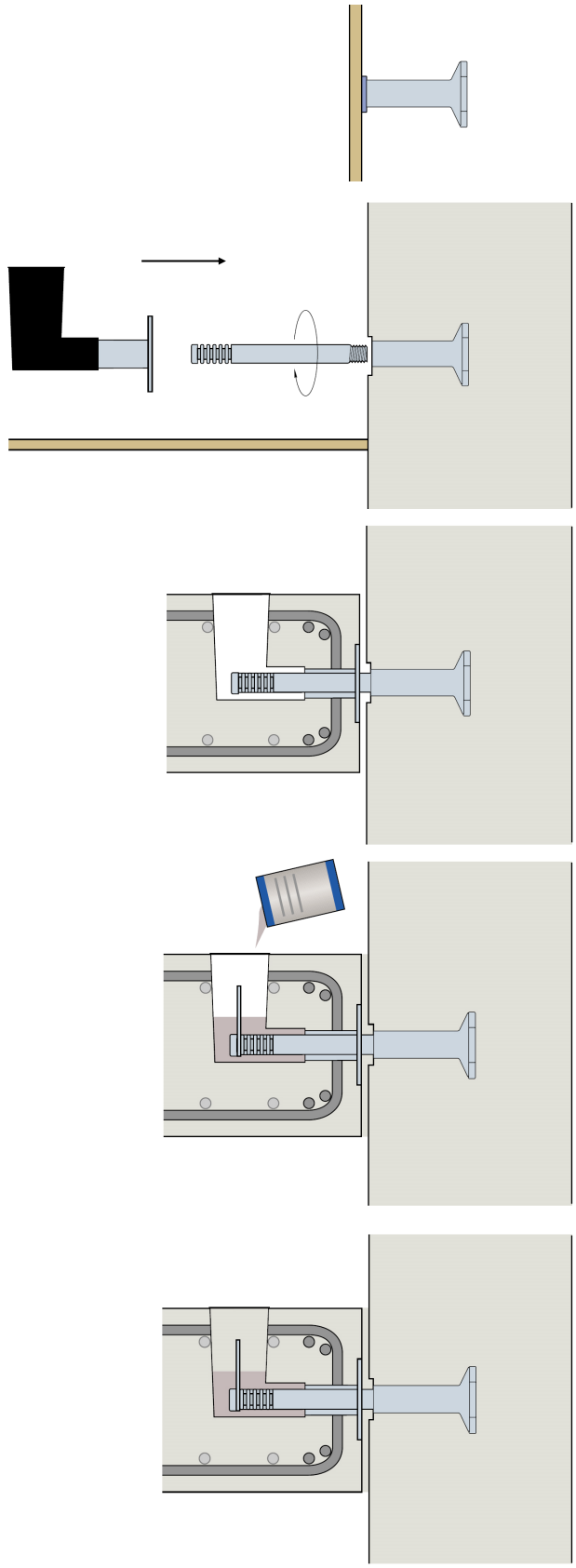
After 24 hours the void former can be filled with cementitious material, level with the top of the slab, to complete the installation. The locked dowel continues to transfer vertical load between the slabs, but movement can no longer take place.

Notes: *Where deep concrete pours are proposed, the installation will require further consideration. More robust fixing of the sleeve and dowel components will be necessary, to avoid displacement during casting of the concrete. Ensure joint has been filled before pouring resin.*



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Installation Guide

Ancon E-HLD Dowel Installation using Ancon Two Part Resin (FIS V 360 S)

The Ancon E-HLD joins new concrete slabs to existing concrete walls. It is designed to transfer shear load where new slabs are connected to diaphragm walls or secant pile walls in basement construction. The E-HLD comprises a stainless steel dowel and Ancon two-part resin is required to install the dowel component.

Pre-installation Notes/Checks

The quantity of resin cartridges required will depend on dowel diameter and number being fixed. Dowel installation to be carried out under the supervision of the person responsible for technical matters on site. Checks must be carried out prior to the installation of the male dowel to ensure the placed concrete matches the design concrete strength and that the temperature is within the permitted range for injection of the resin (see Table 2). Checks must be carried out to ensure the concrete is well compacted and free from significant voids. In the case of aborted holes, these must be filled with an appropriate non-shrink grout of equal or greater compressive strength than the surrounding concrete. Drilling by hammer drill, compressed air drill and diamond drill are suitable methods.

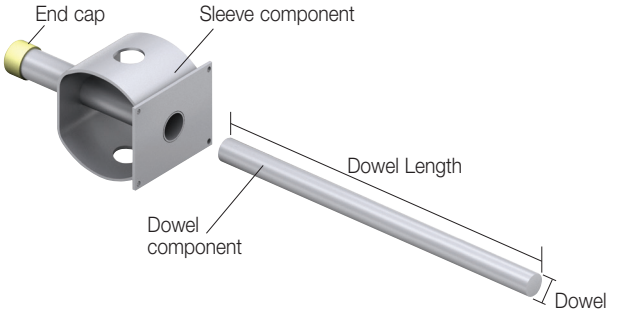


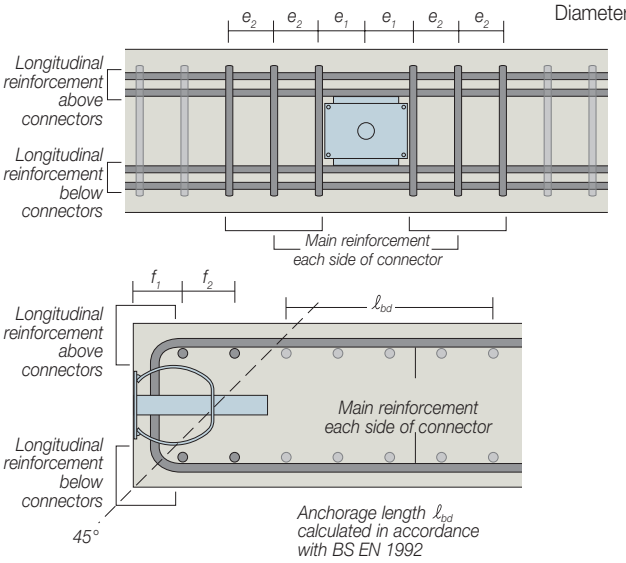
Table 1

E-HLD Male Dowel Dia. (mm)	18	22	24	30	35	42	52
Overall Dowel Length (mm)	270	300	330	350	400	470	570
Max Hole Dia. in Concrete (mm)	23	27	29	35	40	47	57
Hole Depth (mm)	130	155	170	180	205	240	290
Approx. number of dowels per 360ml cartridge	16	10	9	6	4	3	2

Table 2

Concrete Temperature Range	Min. Curing Time	Working/Processing Time
-5°C to ± 0ºC	24 hr	
≥ 0°C to + 5ºC	180 mins	13 mins
≥ + 5°C to + 10ºC	90 mins	9 mins
≥ + 10°C to + 20ºC	60 mins	5 mins
≥ + 20°C to + 30ºC	45 mins	4 mins
≥ + 30°C to + 40ºC	36 mins	2 mins

For wet concrete and flooded holes the curing time must be doubled.



Reinforcement Details

Local reinforcement is required around the sleeve component to guarantee that the forces are transferred between the connectors and the concrete. Correct detailing in accordance with appropriate design codes and the recommendations provided here will ensure Ancon E-HLDs attain their published capacity. The tables below show proposals for the type and spacing of the main reinforcement, together with details of reinforcement above and below the connectors.

E-HLD Local Reinforcement

Based on maximum slab depth, 20mm joint, 30mm cover, min. C25/30 concrete

Options for Main Reinforcement (No. of bars each side)

Product reference	U bars	Spacing (mm)	Longitudinal bars
E-HLD 18 (36.8kN) 160mm slab	3 H8 2 H10 2 H12	e_1 = 55mm; e_2 = 25mm e_1 = 55mm; e_2 = 42mm e_1 = 60mm; e_2 = 60mm	2 H8 2 H10 2 H12
E-HLD 22 (59.2kN) 180mm slab	3 H10 3 H12 2 H14	e_1 = 70mm; e_2 = 30mm e_1 = 85mm; e_2 = 45mm e_1 = 75mm; e_2 = 45mm	2 H10 2 H12 2 H14
E-HLD 24 (71.7kN) 200mm slab	3 H12 2 H14 2 H16	e_1 = 80mm; e_2 = 50mm e_1 = 80mm; e_2 = 50mm e_1 = 80mm; e_2 = 100mm	2 H12 2 H14 2 H16
E-HLD 30 (106.2kN) 240mm slab	4 H12 3 H14 3 H16	e_1 = 107mm; e_2 = 40mm e_1 = 92mm; e_2 = 35mm e_1 = 117mm; e_2 = 50mm	3 H12 2 H14 2 H16
E-HLD 35 (148.6kN) 300mm slab	4 H14 3 H16 2 H20	e_1 = 100mm; e_2 = 45mm e_1 = 125mm; e_2 = 50mm e_1 = 110mm; e_2 = 55mm	3 H14 2 H16 2 H20
E-HLD 42 (182.5kN) 350mm slab	4 H14 4 H16 3 H20	e_1 = 132mm; e_2 = 45mm e_1 = 140mm; e_2 = 55mm e_1 = 140mm; e_2 = 75mm	2 H14 2 H16 2 H20
E-HLD 52 (280kN) 400mm slab	5 H16 3 H20	e_1 = 145mm; e_2 = 60mm e_1 = 145mm; e_2 = 60mm	2 H16 2 H20

Options for Longitudinal Bars (No. bars top and bottom)

Product reference	U bars	Spacing (mm)
E-HLD 18 (36.8kN) 160mm slab	2 H8 2 H10 2 H12	f_1 = 60mm; f_2 = 60mm
E-HLD 22 (59.2kN) 180mm slab	2 H10 2 H12 2 H14	f_1 = 60mm; f_2 = 70mm
E-HLD 24 (71.7kN) 200mm slab	2 H12 2 H14 2 H16	f_1 = 60mm; f_2 = 70mm
E-HLD 30 (106.2kN) 240mm slab	3 H12 2 H14 2 H16	f_1 = 60mm; f_2 = 70mm
E-HLD 35 (148.6kN) 300mm slab	3 H14 2 H16 2 H20	f_1 = 60mm; f_2 = 70mm
E-HLD 42 (182.5kN) 350mm slab	2 H14 2 H16 2 H20	f_1 = 60mm; f_2 = 70mm
E-HLD 52 (280kN) 400mm slab	2 H16 2 H20	f_1 = 60mm; f_2 = 70mm

Notes:

- *e_1 is the distance from dowel centre to centre of 1st U-bar and e_2 is the distance between centres of the next U-bars*
- *f_1 is the distance from the centre of the first longitudinal bar to the concrete face and f_2 is the distance between centres of the next longitudinal bars*
- *Longitudinal bars should be the same diameter as the U-bars*
- *Load performance does not increase with concrete strength (minimum grade C25/30)*

Installation Guide

Ancon E-HLD Dowel Installation using Ancon Two Part Resin (FIS V 360 S)

INSTALLATION PROCEDURE

The recommended wall reinforcement around the dowel bar is 12mm diameter, installed at 150mm vertical and horizontal centres. For advice on other configurations, please contact Ancon.

1. Drill a hole of appropriate diameter and depth (see Table 1).

2. Remove standing water and debris from the hole using oil free compressed air. To ensure hole is free of water and debris, blow out four times.

3. Clean the drill hole four times using an adequate steel brush and a drill, using an extension for deep holes. Repeat the blowing procedure.

4. Twist the cartridge sealing cap to the left and pull it off. Insert the static mixer and turn to the right to lock in place. **The spiral mixer in the static mixer must be clearly visible.** Place the cartridge in the dispenser and press to extrude approximately 10cm of resin until it is a consistent grey colour. Resin that is not grey will not cure and should be disposed of.

   Using the extension tube, inject approx. 2/3 of the drill hole with resin. Fill from the bottom of the hole to eliminate voids. If an excessive amount of resin emerges after inserting the dowel, adjust the amount accordingly.

5. Use clean, oil-free E-HLD dowel bars. Mark the dowel with the appropriate embedment depth (see Table 1). Press the dowel to the bottom of the hole, turning it firmly while doing so. After inserting the dowel, excess resin must emerge around the dowel element.

6. Do not touch the dowel until the appropriate cure time is reached (see Table 2).

7. Once the resin reaches full strength push the female E-HLD sleeve over the exposed end of the dowel. The required local reinforcement should be installed around the E-HLD sleeve, ensuring that the correct cover is maintained. The concrete is cast to complete the installation.

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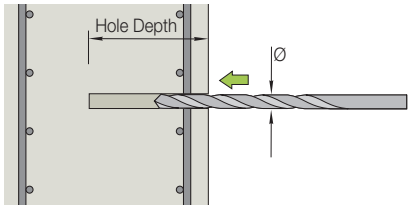

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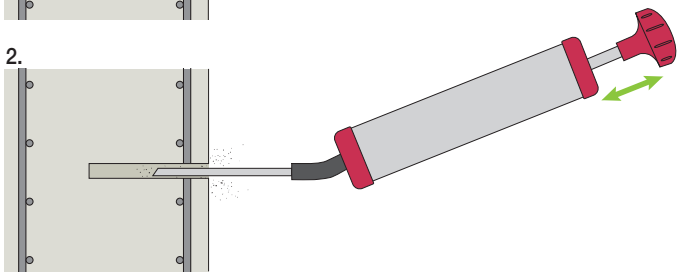

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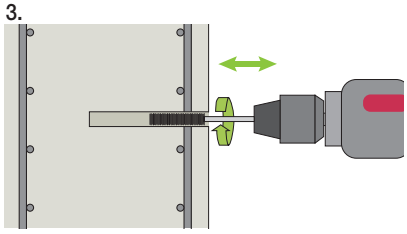

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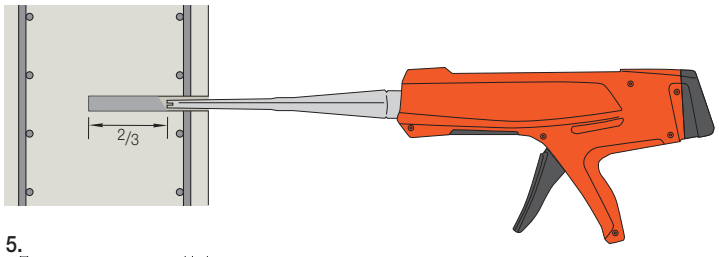

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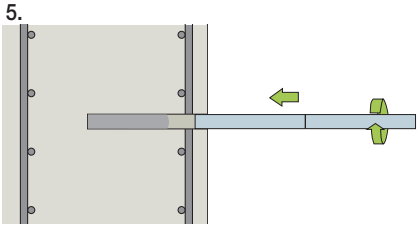

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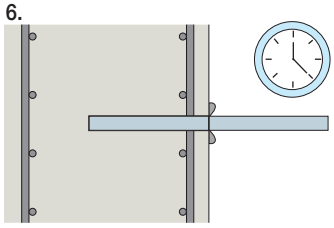

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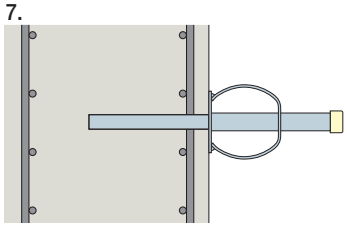

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INSTALLATION GUIDE

KSN ANCHORS

KSN Anchors for wall to slab connection:
KSN Anchors are used to provide reinforcement continuity at joints between concrete cast at different times, in particular for wall to slab connections. Reinforcement continuity systems contribute to the stability of a structure and therefore it is essential that the correct installation procedures are followed.

Prior to Installation

> **!** The handling precautions shown below should be taken in addition to normal handling precautions to avoid physical injury. Ancon Ltd cannot be held responsible for any injury as a result of using our products, unless such an injury is a result of our negligence.

Handling: KSN anchors for wall to slab connections are delivered to site pre-assembled with a tapered timber strip. The anchors are held in position by countersunk socket head cap screws. Tape is provided on the front part of the strip to protect the socket head from concrete ingress.
The product should be handled with gloves by the timber strip.
Corresponding BARTEC PLUS threaded continuation bars should be handled with the same handling precaution as standard reinforcement bars, with additional care taken not to damage the threaded end.
Due to the weight of some of the products, they may require two men handling depending on installation position.

Storage: The timber strip is treated with a sealer to protect it from water; however the product should be protected from frost while stored and from water when possible.

> **!** Ancon KSN anchors must be installed in accordance with this guidance. If in doubt, ask.

Before installation, any loose anchors should be tightened to the timber carrier to ensure that the anchors will not move during concreting. The above handling precautions in addition to normal handling precautions to avoid physical injury apply and personal protection equipment should be worn.

The tape on the face of the timber strip should not be removed as it will prevent concrete ingress in the hex socket.

A formwork release agent should be applied to the timber strip and any spillage must be removed from the anchors.

The omission of the release agent will prevent the easy removal of the timber strip at a later stage and if the timber strip cannot be completely removed, the capacity of the joint may be compromised.

Tools required for installation:
KSN 12 - 10MM a/f Allen Key / Hex Head Wrench
KSN 16 - 12MM a/f Allen Key / Hex Head Wrench
KSN 20 - 14MM a/f Allen Key / Hex Head Wrench
M10 Stud/bolt to push timber away from concrete
Hand Wrench to suit continuation bar diameter
Other requirement:
Formwork release agent

The timber carrier supporting the anchors is positioned against the formwork at the required location of the adjoining slab, orientated to the instructions on the label which indicates that the coloured side should face up. The timber is fixed to the formwork with nails.

> **!** It is important that the strip is set to the correct position, the right way up and fixed to prevent any movement during concreting to ensure adequate cover to the continuation bar and to comply with the design.

KSN Anchors for wall to slab connection:
KSN Anchors are used to provide reinforcement continuity at joints between concrete cast at different times, in particular for wall to slab connections. Reinforcement continuity systems contribute to the stability of a structure and therefore it is essential that the correct installation procedures are followed.

Other wall reinforcement should be installed to the Engineer's details, based on Ancon's recommendations. The concrete is then cast and once it has reached sufficient strength, the formwork is removed to reveal the face of the timber strip with the protective tape.

When installation of the continuation bars is required, the tape is removed to reveal the socket head cap screws which can be unscrewed using the corresponding Allen key (supplied with each order). We recommend keeping the screws in place until installation of the continuations bars. Three M10 tee nuts have been inserted in each timber strip in order to allow for the use of M10 studs/bolts to help push the first timber strip out.

! The KSN anchors are to be used only with Bartec Plus continuation bars provided by Ancon.

The Bartec Plus continuation bar thread should be checked to be free of any dirt and be positioned at the anchor location and rotated to fit into the anchor thread. The connection should then be tightened by using a hand wrench. No torqueing is required.

After tightening there should be no more than 2-4mm of thread exposed for sizes KSN12 and KSN20 and no more than 10mm for size KSN16.

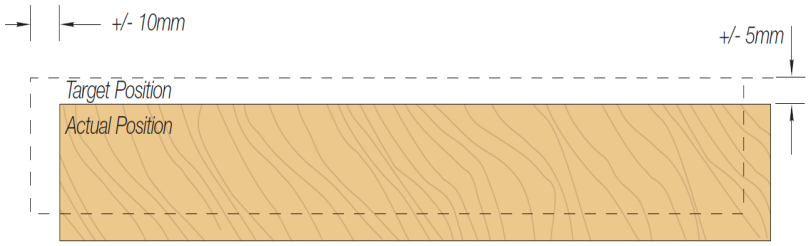
Slab reinforcement should be installed to the Engineers details.

The slab is cast to complete the application.

KSN Anchors for wall to slab connection:
KSN Anchors are used to provide reinforcement continuity at joints between concrete cast at different times, in particular for wall to slab connections. Reinforcement continuity systems contribute to the stability of a structure and therefore it is essential that the correct installation procedures are followed.

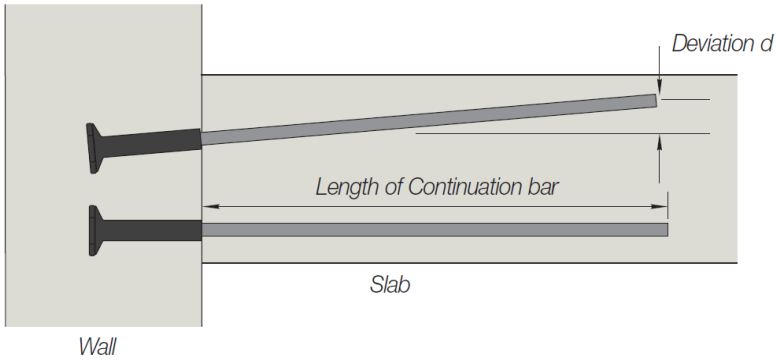
Installation Tolerances

Timber Anchor Carrier Setting Out Deviation Allowances



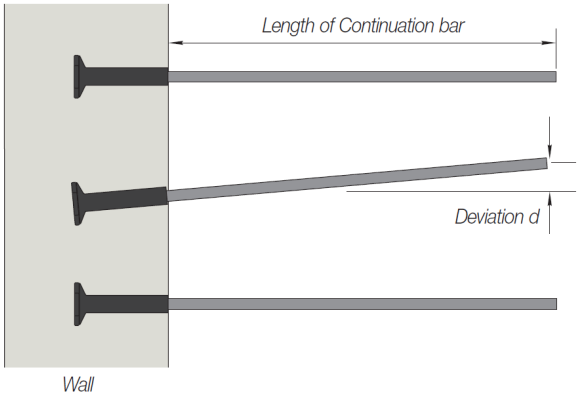
Vertical Transverse Section Alignment of Anchor Side View

Length of Continuation Bar (mm)	Deviation d
700	+/- 2mm
1000	+/- 3mm
1500	+/- 5mm



Horizontal Transverse Section Alignment of Anchor Plan View

Length of Continuation Bar (mm)	Deviation d
700	+/- 10mm
1000	+/- 12mm
1500	+/- 20mm



Summary

KSN anchors for wall to slab connections:

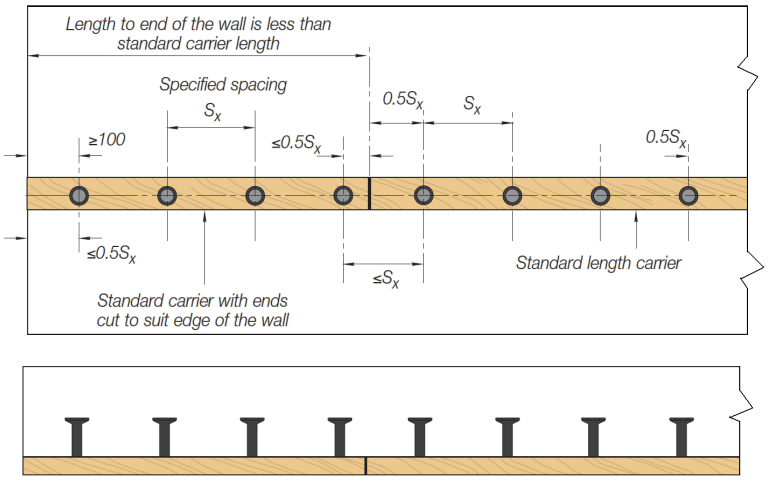
1. Apply release agent to the timber strip.
2. Position the timber strip supporting the anchors the right way up (coloured face up) as indicated on the label against the formwork according to Ancon installation tolerances to provide adequate cover to the continuation bar.
3. Fix timber strip to the formwork with nails or tie it to the reinforcement.
4. Fix the rest of the wall reinforcement to the Engineer's detail based on Ancon's recommendations.
5. Cast the concrete wall.
6. Remove formwork when concrete has reached sufficient strength.
7. Remove tape to reveal head cap screws.
8. Remove socket head cap screws using hex key.
9. Remove timber strip.
10. Position and rotate BARTEC PLUS threaded end of the continuation bar in the anchor.
11. Tighten using a hand wrench on the continuation bar.
12. Visually inspect that no more than 2-4mm of thread is exposed for KSN12 and KSN20 or 10mm for KSN16.

Guidance for cutting standard length anchor carrier

In some instances, at the end of a run of anchors for example, a non-standard carrier length may be required. In order to achieve this, the standard timber carrier may be cut to suit, under the following conditions:

- Anchor carriers are to be installed end to end without any gaps between them at all locations
- The specified spacing between anchors must never be exceeded
- The actual anchor spacing can be reduced to below the specified spacing but with a minimum of 150mm
- Minimum edge distance should be 100mm

Cut at the end of a run

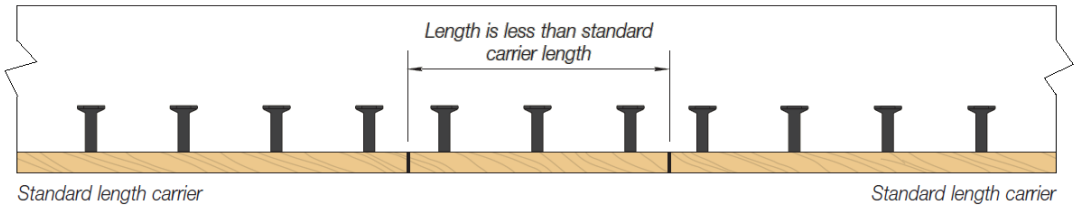


Standard Length Carrier

Standard carrier with ends cut to suit edge of the wall

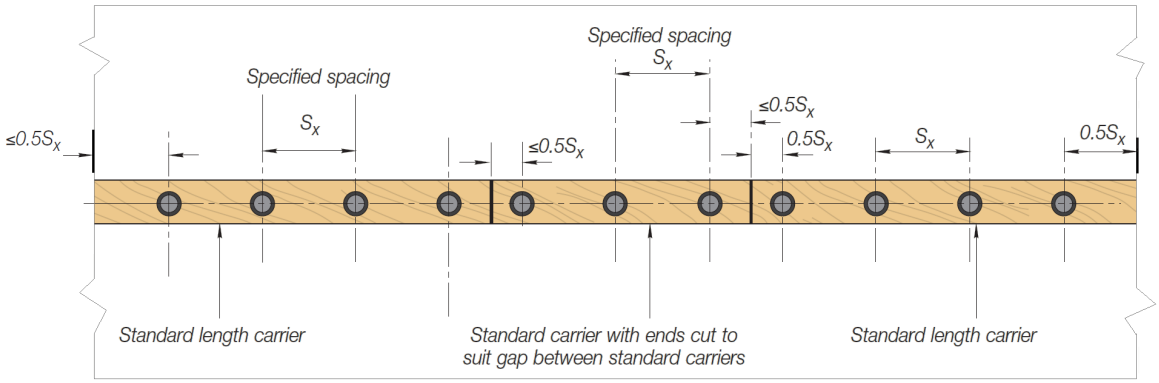
Plan View

Cut at the middle of a run



Standard carrier with ends cut to suit gap between standard carriers

Plan View



Wall Elevation

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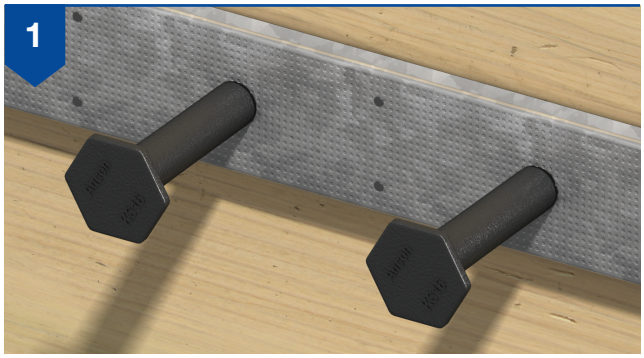
Installation Guide

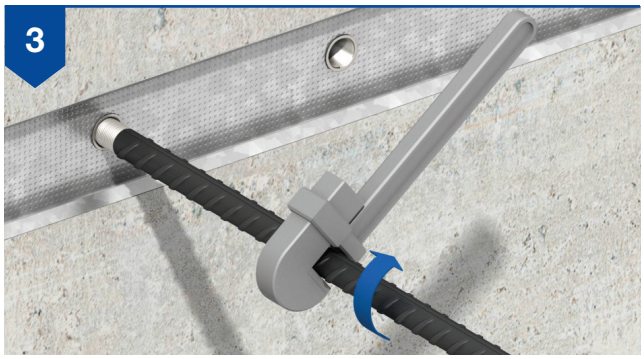
October 2019

Ancon KSN Anchor Box



Nail the KSN Anchor Box to the formwork. The wall reinforcement is installed to which the anchors are tied. The concrete is cast and once it reaches sufficient strength, the formwork is removed to reveal the steel cover.

When a connection is required, the cover is removed and the bolts which held the Anchors to the box prior to installation are removed to reveal the threads.



The Bartec Plus parallel-threaded continuation bars are inserted into the KSN Anchors and hand-tightened until fully locked using a wrench. Lap and fix the slab reinforcement and pour the concrete to complete the installation.

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INSTALLATION GUIDE

CB COUPLER BOX AND CS COUPLER STRIP

Ancon CB Coupler Boxes simplify the continuity of reinforcement at concrete construction joints. They allow engineers to design slab-to-wall connections without the traditional restrictions on bar length and bar diameter of re-bend/pull-out continuity systems and help contractors to eliminate manual bar straightening on site.

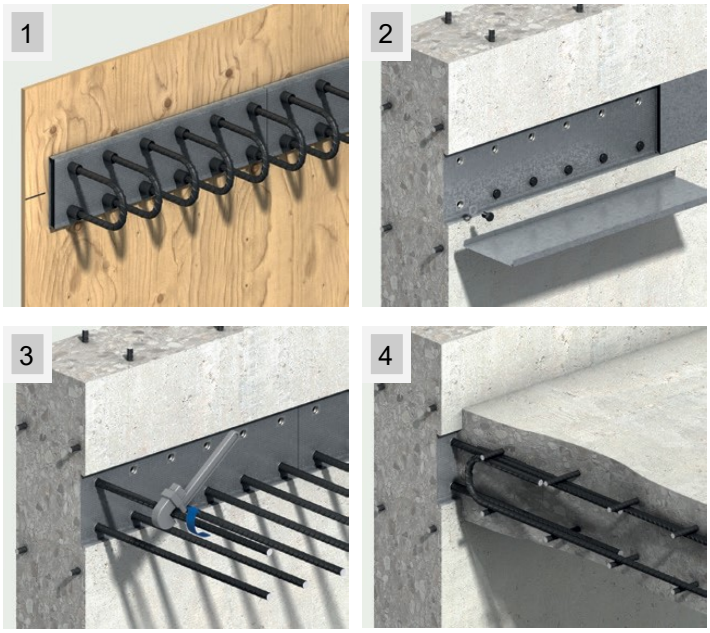
CB Coupler Box Installation

1. The Coupler Box should be orientated according to the instructions on the label. Position as required. The complete unit is nailed to the formwork or alternatively wired back to the main reinforcement cage. Other wall reinforcement should be installed to the Engineer's details and the concrete is cast.

2. Once the concrete has reached sufficient strength, the formwork is removed to reveal the box face. When installation of the continuation bars is required, the box lid and coupler bolts are removed, revealing the internal threads.

3. Install the Ancon CXL continuation bars, ensuring that they are fully tightened. Once tightened, no more than 2-4mm of thread should be left exposed.

4. Slab reinforcement should be installed to the Engineer's details and the slab is cast to complete the application.



Ancon CS Coupler Strips offer all the benefits of CB Coupler Boxes and are specifically designed to simplify rebar continuity at joints where walls are curved on plan. The flexible steel strip used to carry the couplers is nailed directly to curved shuttering.

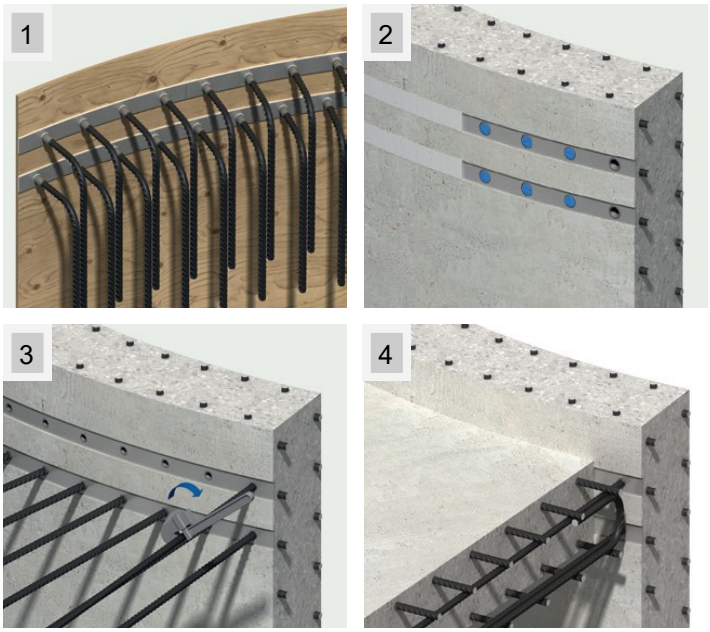
CS Coupler Strip Installation

1. The Coupler Strip should be orientated as required. The complete unit is flexed against the curved formwork and either nailed in position or alternatively wired back to the main reinforcement cage. Other wall reinforcement should be installed to the Engineer's details and the concrete is cast.

2. Once the concrete has reached sufficient strength, the formwork is removed to reveal the 6mm thick corrugated plastic rebate former. When installation of the continuation bars is required, the rebate former and the recessed caps protecting the threads are removed, revealing the internal threads of the couplers.

3. Install the Ancon CXL continuation bars, ensuring that they are fully tightened. Once tightened, no more than 2-4mm of thread should be left exposed.

4. Slab reinforcement should be installed to the Engineer's details and the slab is cast to complete the application.



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Installation Guide
TAPER THREAD STARTER BARS

Ancon taper thread starter bars are approved by UK CARES. The starter bar system is manufactured using CARES approved reinforcing bars.

Important Note
Only continuation bars with the Ancon taper thread should be used with the Ancon tapered thread starter bar system.

The installation is as follows when using the Ancon tapered thread system.

1. The coupler is supplied fixed to the reinforcing bar ready to be installed and cast in concrete.

2. After casting the concrete and when ready to extend, remove the plastic end cap (and nailing plate where appropriate) from the coupler. Check that the continuation bar thread is clean and then position the continuation bar in the sleeve and rotate the bar into the coupler.

3. Continue to screw the bar into the coupler until tight.

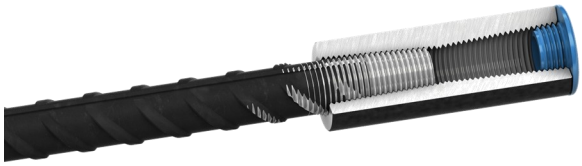
4. To ensure correct installation, tighten the joint to the specified torque using a calibrated torque wrench on the continuation bar. Tightening torques are shown in the table below.

Installation Torque

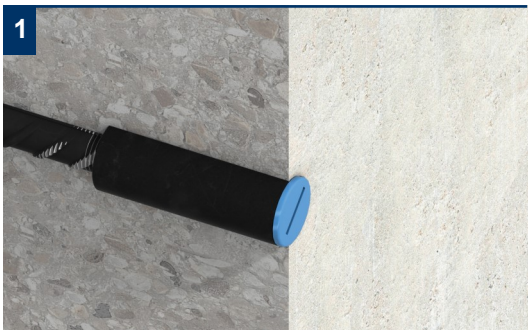
Bar Diameter (mm)	Torque (Nm)
12	60
16	110
20	165
25	265
32	285

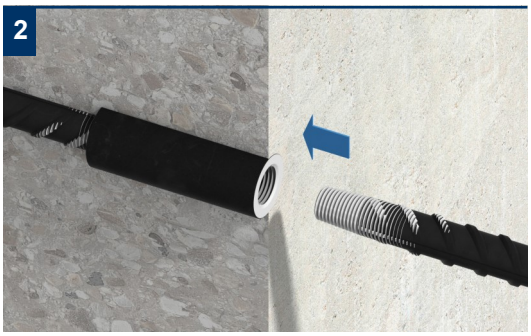
System Components

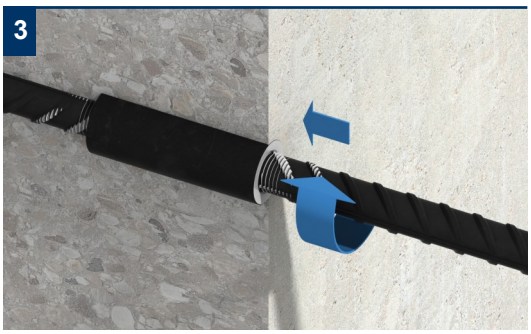
Starter Bar
The starter bar is the female component of the system. It consists of a bar, normally threaded at one end only, supplied fixed to an Ancon coupler (below).

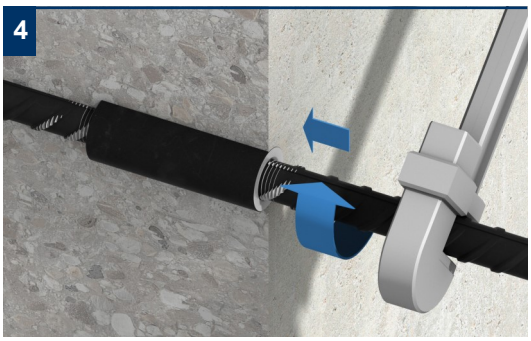


Continuation Bar
This is the male component and is normally provided with the starter bar component, taper threaded at one end to suit the Ancon tapered thread coupler system. The lengths of the continuation bar will vary according to customer requirements.









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Ancon MBT Continuity Coupler Installation Guide
Sizes 12mm to 40mm

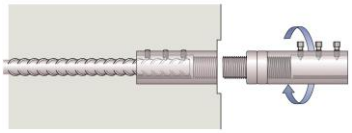
Ancon MBT Couplers must be correctly installed to ensure that the full working capacity can be achieved. The coupler should be complete with the correct number of bolts and the two serrated strip saddles in place inside the coupler. For correct installation, all the bolts must be tightened until the heads shear off.

The Continuity Coupler male component will be delivered with the threaded stud already in place and the locknuts located on the threaded stud. If the female component is to be left insitu for an extended period, the threads must be greased to prevent corrosion.

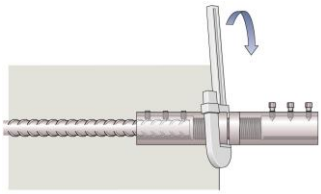
1 Fix the nail plate to the formwork and fully screw the female component onto the plate. Insert the bar into the coupler, ensuring that it does not encroach into the threaded section. Finger tighten the lockshear bolts.

2 Starting from the nail plate end and working outwards, partly tighten the lockshear bolts using either a ratchet wrench or a nut runner as appropriate. Do not use impact tools. Repeat again, this time fully tightening the lockshear bolts until the bolt heads shear off. Cast in concrete.

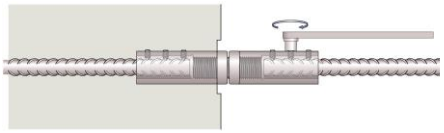
3 Remove the formwork and unscrew the nail plate. The male component complete with two locknuts , can now be fully screwed into the fixed female component. The male coupler can be rotated up to a full turn to allow the lockshear bolts to be located in an accessible position for tightening.



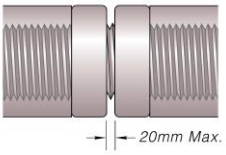
4 Run the locknut along the threaded male stud to abut the female component. Fully tighten the locknut against the female section using a wrench.



5 Place the continuation bar into the male component and finger tighten the bolts. Check alignment and make any adjustments. Starting from the centre and working outwards, partly tighten the lockshear bolts using either a ratchet wrench or a nut runner as appropriate. Do not use impact tools. Repeat again, this time fully tightening the lockshear bolts until the bolt heads shear off. Fully tighten the locknut.



6. Do not use impact power tools to tighten the bolts.



Note: When the coupler is fully assembled the visible threaded stud between the two locknuts must not exceed 20mm.

Ref.	No./Bolt Thread	Socket Head	Nominal Bolt Shear Torque		Handle Length*
			(Nm)	(lbf ft)	(mm)
C12	6/M10	1/2”	55	40	300
C16	6/M12	1/2”	108	80	600
C20	8/M12	1/2”	108	80	600
C25	8/M16	5/8”	275	150	900
C32	10/M16	5/8”	360	265	1500**
C40	14/M20	3/4”	525	385	1800**

The use of scaffold poles is not recommended as an extension to hand wrenches; this can result in increased stresses, leading to thread strip during installation.

* The minimum length of handle to limit the force required to shear the bolts to 250N. This is approximately equivalent to lifting 25kg or 56 lbs.

** Although these can be tightened using a ratchet wrench, Ancon recommends the use of an electric or pneumatic wrench designed to deliver a steady tightening force to the bolts. **Do not use impact power tools.**

For further details please contact Ancon:
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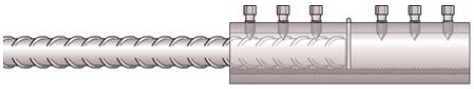
Ancon MBT Coupler Installation Guide

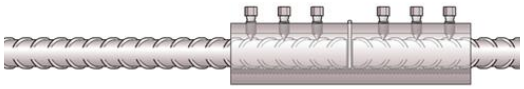
Ancon MBT Couplers must be correctly installed to ensure that the full working capacity can be achieved. The coupler should be complete with the correct number of bolts and the two serrated strip saddles in place inside the coupler. For correct installation, all the bolts must be tightened until the heads shear off.

1 Place coupler over the end of the bar to half the coupler length +/- 6mm and finger tighten the lock shear bolts onto the bar. Check the alignment and make any necessary adjustments.



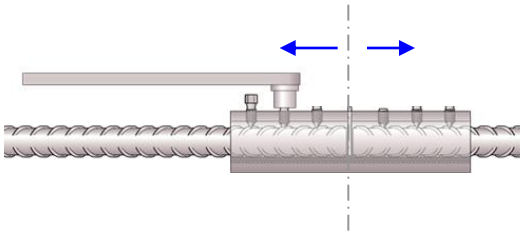
2 Place other bar end into the coupler until it pushes up against the first bar and finger tighten the remaining lockshear bolts. Check the alignment and make any adjustments.

3 The lock shear bolts should be tightened using either a ratchet wrench, electric or pneumatic power tool. Do not use impact power tools.



4. On one half of the coupler, starting from the centre of the coupler and working outwards, towards the end of the coupler, **partly tighten** all of the lock shear bolts using the appropriate tool.

5 Repeat step 4 again, starting from the centre of the coupler and working towards the end of the coupler, **fully tighten** all of the lock shear bolts, using the appropriate tool, until the bolt heads shear off.



6. Steps 4 and 5 to be completed for the other half of the coupler.

Ref.	No./Bolt Thread	Socket Head	Nominal Bolt Shear Torque		Handle Length*
			(Nm)	(lbf ft)	(mm)
ET10	4/M10	1/2”	55	40	300
ET12	6/M10	1/2”	55	40	300
ET14	6/M12	1/2”	108	80	600
ET16	6/M12	1/2”	108	80	600
ET20	8/M12	1/2”	108	80	600
ET25	8/M16	5/8”	275	203	1100**
ET28	10/M16	5/8”	275	203	1100**
ET32	10/M16	5/8”	360	265	1500**
ET40	14/M20	3/4”	525	386	1800**

* The minimum length of handle to limit the force required to shear the bolts to 250N. This is approximately equivalent to lifting 25kg or 56 lbs.

** Although these can be tightened using a hand ratchet wrench, Ancon recommends the use of an electric or pneumatic wrench designed to deliver a steady tightening force to the bolts. Appropriate tools can be purchased or hired from Ancon. **Do not use impact power tools.**

The use of scaffold poles is not recommended as an extension to hand wrenches; this can result in increased stresses, leading to thread strip failure during installation. For further details please contact Ancon.

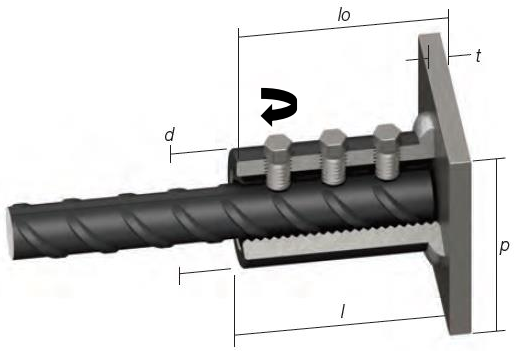
BATCH NO **ET25 220A**	**MBT Coupler Installation Guide** **Rev: July 2018**	Ancon® Tel: +44 (0) 114 275 5224 Email: info@ancon.co.uk Web: www.ancon.co.uk

Ancon MBT Headed Anchor Installation Guide

Ancon MBT Headed Anchors must be correctly installed to ensure that the full working capacity can be achieved. The anchors must be complete with the correct number of bolts and the two serrated strip saddles in place inside the coupler. For correct installation, all the bolts must be tightened until the heads shear off.

1a) **Headed Anchor with no hole in plate** - place the headed anchor over the rebar such that the end plate and rebar are in contact within the tube. Tighten the lockshear bolts onto the bar by hand. Check the alignment and make any necessary adjustments.

1b) **Headed Anchor with hole in plate** - place the headed anchor over the rebar and hold in the required position. The rebar should be level with, or project beyond, the surface of the plate. Tighten the lockshear bolts onto the bar by hand sufficient that the anchor is held in place. Check the alignment and make any necessary adjustments.



2) The lockshear bolts must be tightened using either a ratchet wrench or an electric or pneumatic power tool. Do not use impact power tools. Starting from the plate end and working outwards, partly tighten all of the lockshear bolts.

3) Repeat step 2, starting from the plate end outwards, but this time fully tighten all of the lockshear bolts, using an appropriate tool, until the bolt heads shear off.

Bar Diameter (mm)		**12**	**16**	**20**	**25**	**32**	**40**
External Diameter (mm)	*d*	33.4	42.2	48.3	54.0	71.0	81.0
Coupler Length (mm)	*l*	75	82	104	129	156	247
Total Length (mm)	*lo*	85	92	114	139	171	262
Plate Thickness (mm)	*t*	10	10	10	10	15	15
Plate w x h (mm)	*p*	70	80	90	100	130	150
Socket Size A/F (ins)		$^1/_2$	$^1/_2$	$^1/_2$	$^5/_8$	$^5/_8$	$^3/_4$
Number of Bolts		3	3	4	4	5	7
Approx. Weight (kg)		0.74	1.07	1.58	2.29	4.72	8.30
Torque (Nm)		55	108	108	275	360	525
Torque (lbf ft)		40	80	80	203	265	386
Handle Length* (mm)		300	600	600	1100**	1500**	1800**
Part No. (No hole in plate)		ETHA12	ETHA16	ETHA20	ETHA25	ETHA32	ETHA40
Part No. (Hole in plate)		ETHA12H	ETHA16H	ETHA20H	ETHA25H	ETHA32H	ETHA40H

Note: *Minimum compressive strength of concrete 25/mm^2. Other sizes available on request.*

* The minimum length of handle to limit the force required to shear the bolts to 250N. This is approximately equivalent to lifting 25kg or 56lbs.

** Although these can be tightened using a hand ratchet wrench, Ancon recommends the use of an electric or pneumatic wrench designed to deliver a steady tightening force to the bolts. Appropriate tools can be purchased or hired from Ancon. **Do not use impact power tools.**

The use of scaffold poles is not recommended as an extension to hand wrenches; this can result in increased stresses, leading to thread strip failure during installation. For further details please contact Ancon.