Leviat®

Ancon®

Installation Guide

Ancon Optima Masonry Support Systems

The Ancon Optima 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 200mm in 5mm increments and are universal for the five Ancon Optima 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 five standard systems.

System	Angle Length (mm)	Nominal Length* (mm)	Fixing Zone Colour	Bracket Position (mm)
Ancon Optima 6	1390	1400	Orange	700
Ancon Optima 8	1190	1200	Yellow	600
Ancon Optima 10	990	1000	Red	500
Ancon Optima 12	990	1000	Green	500
Ancon Optima 14	790	800	Blue	400

*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 laser-cut 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 Optima

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

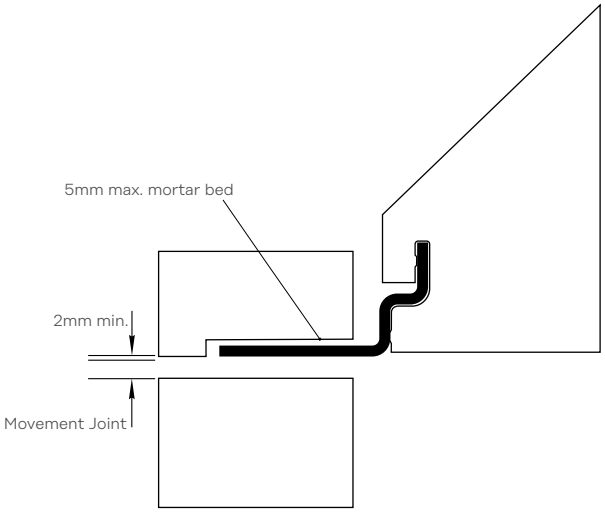
The system must be positioned at the correct level; there must be no gaps between the back of the bracket and the structure at both the fixing point and the lowest point of contact between the bracket and the structure. Brackets must sit against a solid, non-compressible backing structure; thick or compressible EPDM or DPC material should not be installed between the brackets 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 Leviat. 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 higher than the top of the compressible filler; 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.



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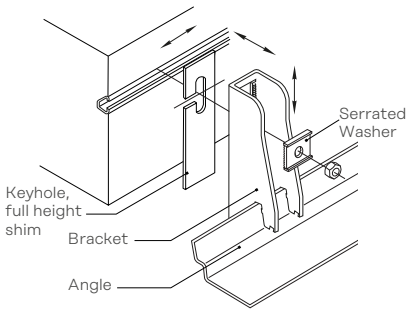
Cavity Variation

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 Ancon Optima.
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. Ancon Optima Masonry 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.

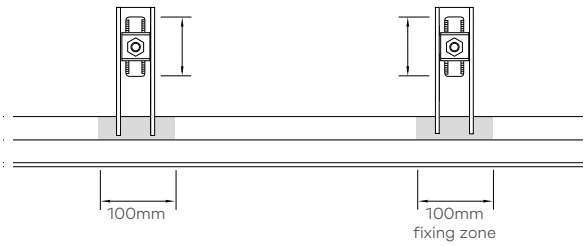


It is important to utilise the fixings supplied as these are an integral component of the design. Serrated washers must be installed in the correct orientation i.e. serrations horizontal to match those on the bracket. Ensure nuts are tightened to the tightening torque specified on the drawings (see our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

Horizontal Adjustment

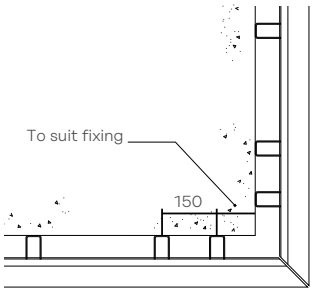
Ancon Optima angles have a 100mm pre-marked fixing zone which provides ±50mm horizontal adjustment. If fixing into concrete with expansion bolts, the bracket can be moved to eliminate clashes between the bolts and reinforcing bars.

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

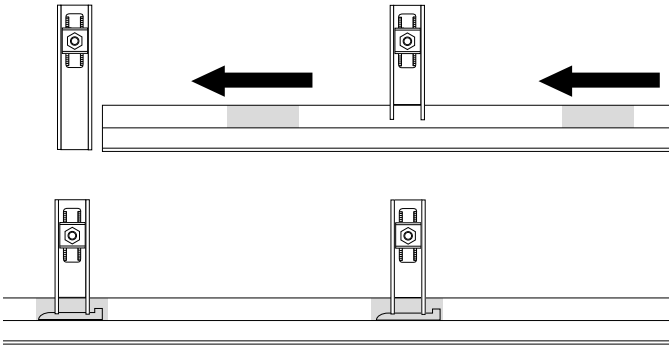
External corners require a different angle. These are usually 850mm long and need three brackets, two at the corner (at 150mm centres) and a third bracket near the other end of the angle. Corner layout drawings for various fixing types are available here:



Optima corner angles must not be cut or modified on site.

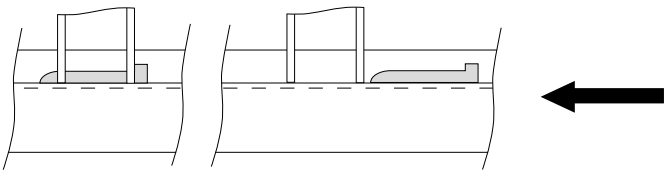
Main Runs of Support

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 wedges supplied by us.

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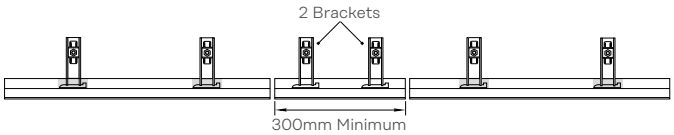
Cutting On Site

Ancon Optima 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.**

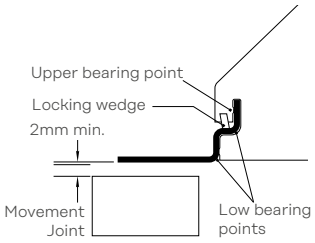


When cutting the Ancon Optima angle ensure that all Health and Safety rules are followed at all times. It is essential that any persons intending to cut the support angle are familiar with these rules.

Optima corner angles must not be cut or modified on site.

Location of Angle in Bracket

Ancon Optima 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

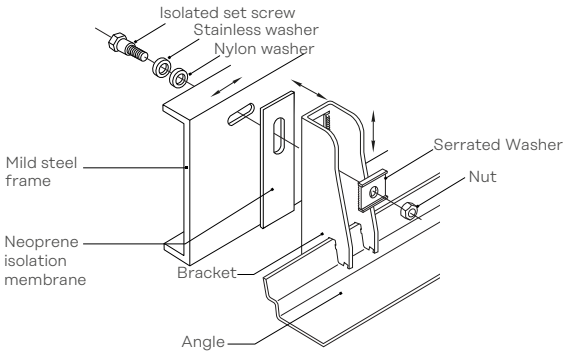
Angles should be set so that the back of the brick is within 5mm of the back of the angle. This will ensure that the minimum 2/3 bearing is achieved for the brickwork.

Bi-Metallic Corrosion

Ancon Masonry 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, preventing 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 have been independently tested and verified as 'A1-s1,d0 reaction-to-fire classification' and have 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.

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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.

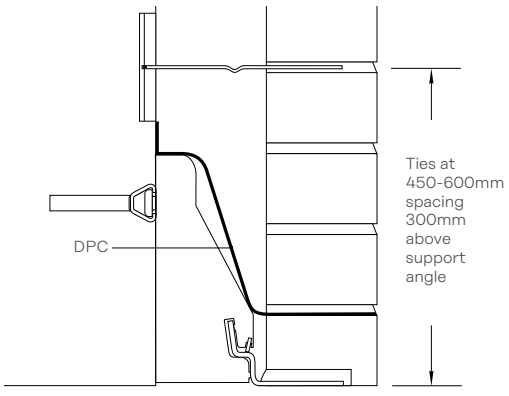
Ensure that the first ties are properly positioned and are securely fixed back to a rigid structure.

Products which rely on compression fit, such as closed state cavity barriers, should be installed with care and steps taken to avoid pushing the external brick leaf out of line. Guidance should be sought from the relevant product manufacturer.

Where cavity variations occur, the passive fire protection supplier should be consulted to ensure the proposed solution is still fit for purpose.

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. Ensure 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.



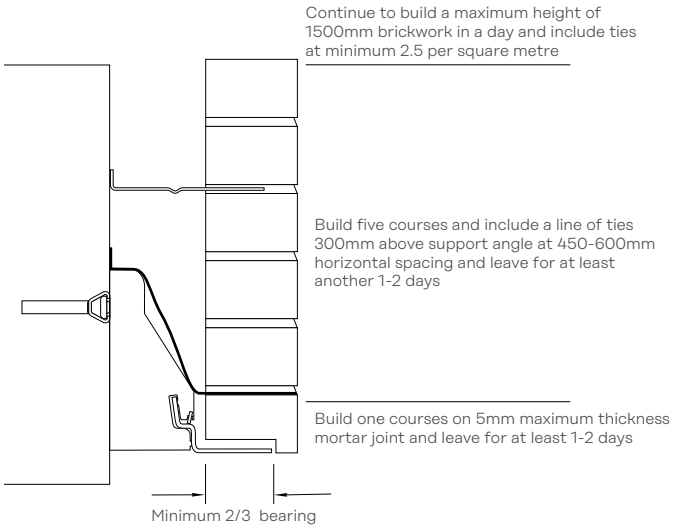
Before any further courses are built, the mortar should be allowed sufficient time to cure for the ties to take the restraining load as the brickwork proceeds. The time period will vary, but should be at least two days, and will be more if the mortar has additives to extend its workability and/or in 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 as per the project specification but at no less than 2.5 ties per square metre (this is usually at 900mm horizontal x 450mm vertical spacing in a staggered pattern), within 450mm of the first row 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 4mm unless agreed with our Technical Services Team.
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 225-300mm 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.



For Optima load capacity and cavity information please refer to https://www.ancon.co.uk/products/masonry- support/non-welded-bracket-angle-support

Scan for Optima corner layout drawings

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