

# Installation Guide

## Accommodating Cavity Variations

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 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. Leviat supply shims in 2, 3, 4, 5 and 6mm thicknesses. It is good practice to use as few separate loose shims as possible to make up the full shimming requirement - typically no more than 3. No. loose shims should be used per bracket.

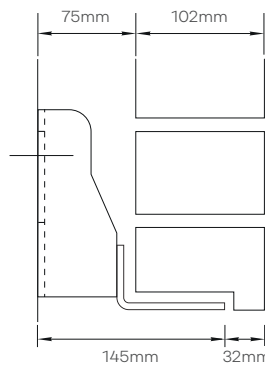
When utilising shims they must be of sufficient length to extend to the lowest point of contact between the bracket and the structure.

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, therefore shims with a vertical slot are not suitable. Solid shim packs in 15, 20 and 25mm can be supplied. Solid shim packs may be used in conjunction with a single standard loose shim up to 3mm in thickness. In this manner the system can accommodate cavity increases up to +28mm.

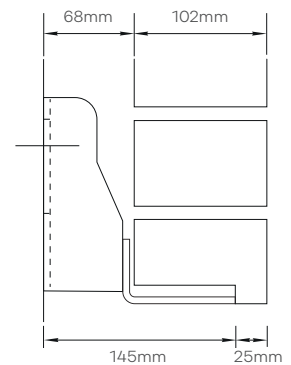
When utilising shims they must be of sufficient length to extend to the bottom of the bracket.

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 Leviat's technical staff prior to use. Extension plates should not be used in conjunction with shims.**

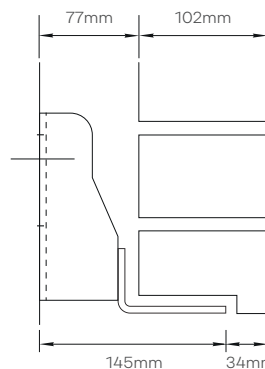
**Design Cavity**



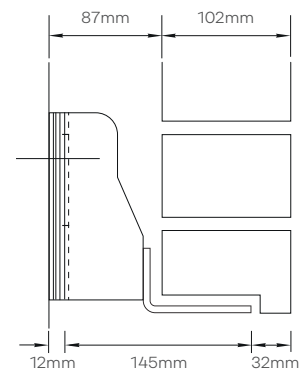
**Reduced Cavity: -7mm**



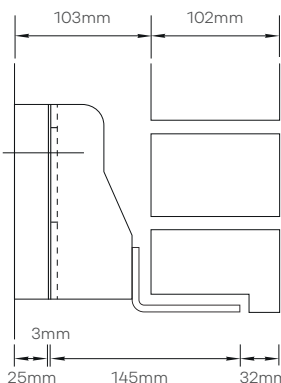
**Increased Cavity No Shims: +2mm**



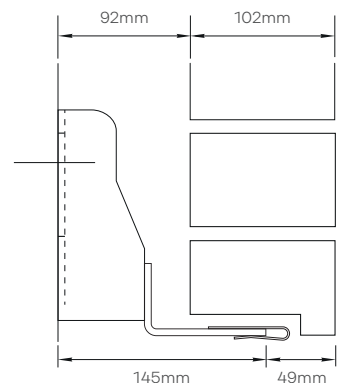
**Maximum Loose Shims: +12mm**



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



**Extension Plate: +17mm**



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### 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.

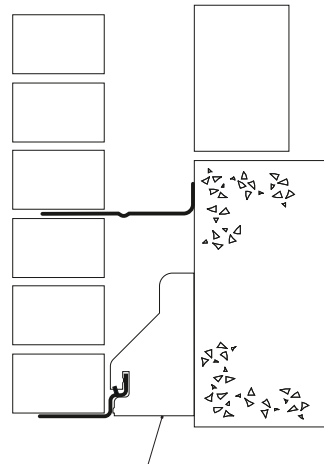
### Accommodating larger cavity variations

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 Leviat 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.

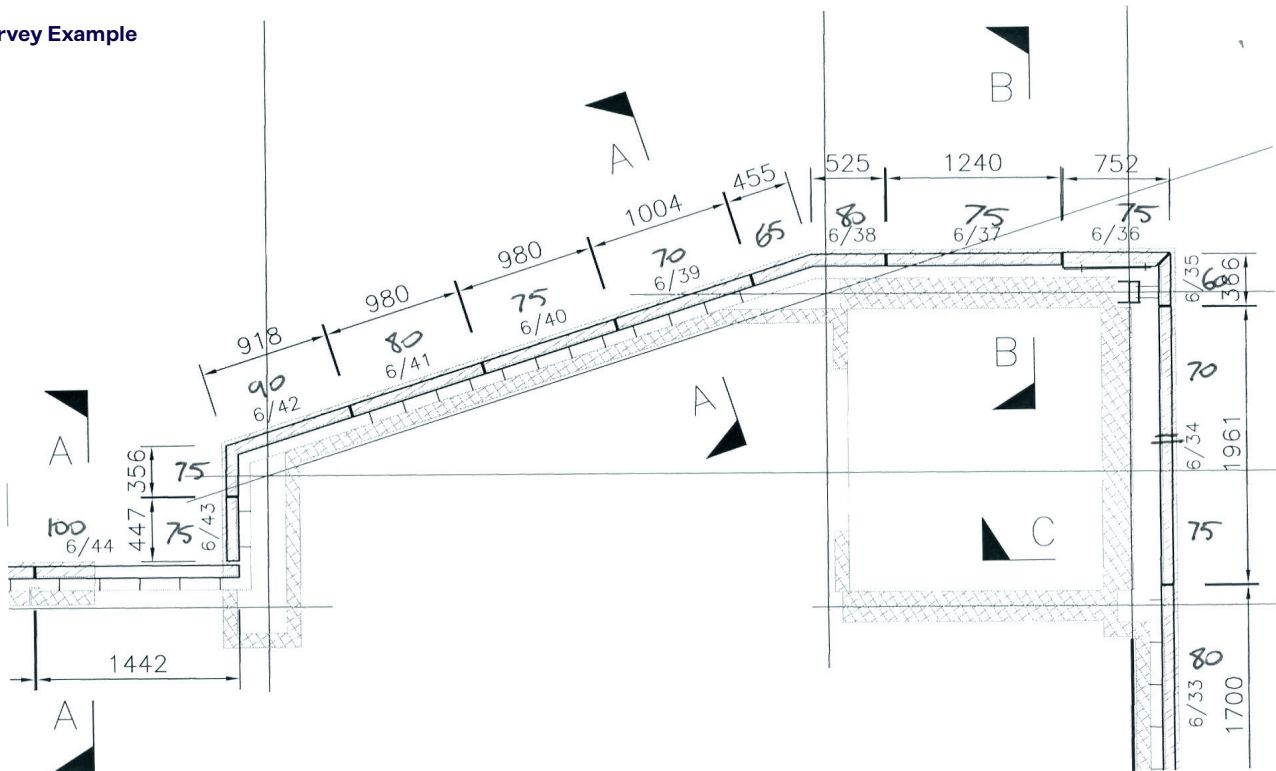
### Ancon Optima System

An alternative to the Ancon MDC and CFA Support Systems is the Ancon Optima System, which incorporates a two step angle and a range of interchangeable brackets, enabling cavities of 60–200mm to be accommodated. Standard Ancon Optima Systems to support loads of 6kN, 8kN, 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 Ancon Optima and other support systems is available in our literature.



Ancon Optima interchangeable brackets to suit variations in cavity size

### Survey Example



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