

Bearing shims

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Precast concrete units are commonly supported on bearing shims. These provide a means of fine adjustment of levels. Shims are usually steel, stainless if corrosion might occur, although hard plastic shims are also available.

The size of shims is determined by the bearing stress of the materials involved. Although precast concrete is usually of high strength, the supporting material may be weaker concrete or masonry. It is the weaker material that will control the sizing. Using multiple shim points is not normally an option on simple units, since the self weight of the unit will only be taken by the two highest shim packs.

Shim size	Max unit weight
50 x 50	4 tonnes
50 x 100	8 tonnes
75 x 75	9 tonnes
100 x 100	17 tonnes
75 x 150	19 tonnes
125 x 125	25 tonnes
100 x 150	25 tonnes

The table gives general guidance on the minimum bearing sizes required for various unit weights. It is based on a minimum material strength of 30 N/mm² and assumes that 50% of the unit weight is on each shim. Shims are relatively inexpensive, and it is good practice to size shims on the large size rather than simply using the minimum. If units are stacked, then it is the total weight that must be considered.

Using shims of different sizes in the same stack should be avoided.

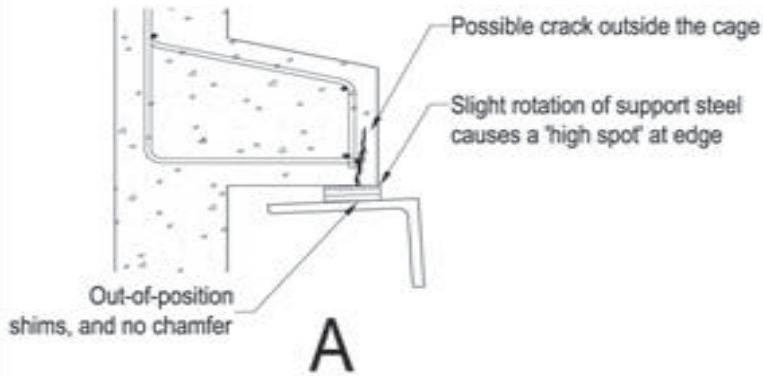


Typically a shimming allowance of between 25mm and 50mm will suffice. This gap should be agreed at an early stage and shown on drawings. It is bad practice to have excessive shim height, particularly if the shims are small, as this can result in instability. A check should also be made that the stack of shims is in line vertically as this can also cause stability problems.

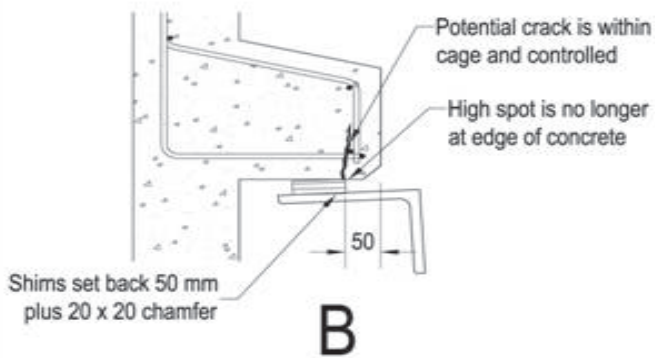
For shims to function correctly they should be full contact with both bearing surfaces. If surfaces are excessively uneven, then a high strength grout bed may be required to provide a suitable surface.

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Shims should not be positioned closer to a vertical face than the reinforcement cover on that face. The area around a shim is highly stressed, and if a high spot occurs, it can cause the concrete cover to crack and spall off. This is especially likely if supports are uneven or rotate (see diag A).



One way of reducing the chances of this happening, especially on a corbel, is to incorporate a chamfer, say 20 x 20 at the corner. Shims should then be set a further 30mm inside the chamfer, i.e. a minimum of 50mm from the vertical face. (see diag B).