

Stainless Steel Masonry Support Systems

Best Practice Information Sheet for Contractors

MSIG provides guidance for engineers, architects, contractors and specialist sub-contractors on all aspects of design, buildability and good construction practice relating to stainless steel masonry support

This Information Sheet should be read in conjunction with *Best Practice Information Sheet for Specifiers* (SCI-P298).

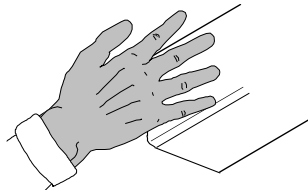
INTRODUCTION

Stainless steel masonry support systems play an important role in supporting the cladding to a structure and should be designed and installed with care. The critical dimensions of a support system are much smaller than most structural dimensions. Slight deviations in these dimensions can cause relatively large effects on the position of the loading, on the associated deflections and stresses in the support system, and on the main structure.

Masonry support systems simplify construction due to the built-in adjustability.

SAFETY

Masonry support systems are generally lightweight and easy to handle. However, the components are produced from sheared plates and can have sharp edges. Therefore anyone handling them should wear suitable personal protective equipment.



Personal protective equipment should be worn.

STORAGE

It is important that these systems are carefully stored on site to avoid carbon steel pick-up; this would subsequently rust and stain the surface. Any stainless steel components should be stored in a suitable area and only stainless steel tools used with them. When carbon steel lifting or handling equipment is used, a suitable protective material should be placed between the stainless and carbon steel to prevent damage.

Masonry support systems should be stored carefully to avoid damage or contamination.

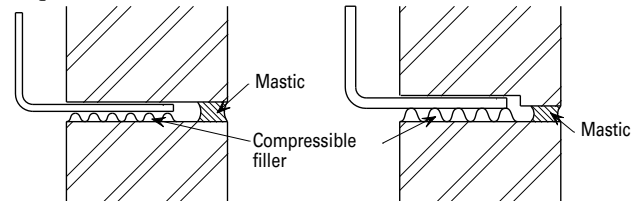
STRUCTURAL FRAME

The actual position of the structural frame should be checked for its line and level before the support system design is finalised and manufacture commences. If these are within the tolerances that the support system can accommodate, then the system can be manufactured and installed using the adjustments described below. If the structural frame is outside tolerance, the manufacturer of the support system should be consulted for advice.

If the structural frame is not within tolerance, the support system manufacturer should be consulted for advice.

SOFT HORIZONTAL JOINTS

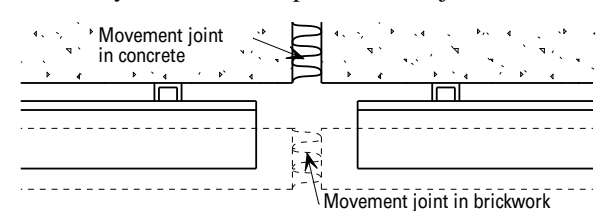
It is essential that all soft horizontal joints have compressible filler underneath the support angle, with mastic seal on the exposed face of the cladding. Thin angles may be concealed within the joint; thick angles may require rebated bricks.



Compressible filler should be used underneath the support angle, with mastic at the outer

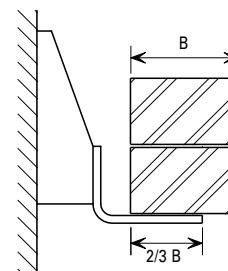
VERTICAL MOVEMENT JOINTS

The angles in support systems may span across vertical movement joints in the brickwork, unless they coincide with the movement joints in the structural frame, in which case the system should stop short of the joint.



CAVITY WIDTH ADJUSTMENTS

To cater for minor deviations in the position of the structural face, the position of the masonry wall on the support angle can be adjusted. Ideally, the design bearing width of the masonry wall on the angle is at least two thirds of the width of the wall. In practice, this can be reduced, but the advice of the support system manufacturer should be sought.

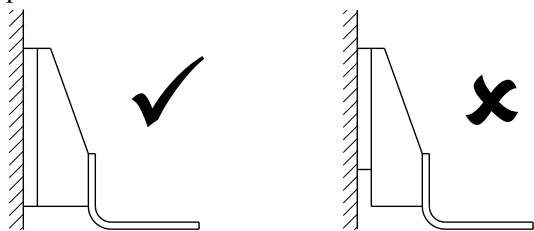


At least two thirds of the width of the masonry wall should be bearing on the support angle.

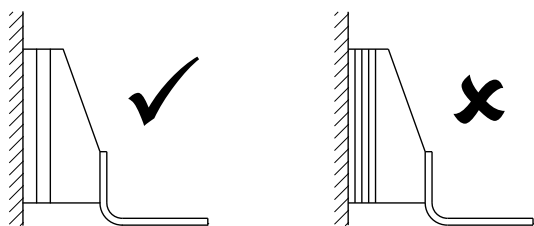
To increase the cavity width further, stainless steel shims can be inserted between the structure and the support angle or bracket. The maximum thickness of shims that should be used in one position is the outside diameter of the fixing bolt or 16 mm, whichever is less. Larger widths can sometimes be accommodated, but the advice of the support system manufacturer should be sought.

The maximum thickness of shims should be the outside diameter of the fixing bolt or 16 mm, whichever is less.

Where stainless steel shims are used, they must be the full depth of the bracket or the vertical leg length of the angle. The individual shims should always be as thick as possible.



Shims should be the full depth of the bracket or vertical angle leg.



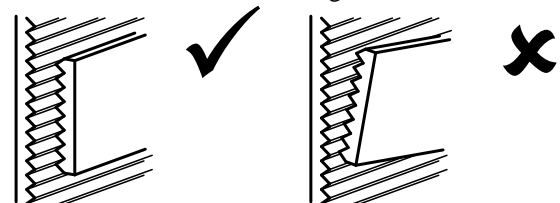
Individual shims should always be as thick as possible.

HORIZONTAL ADJUSTMENTS

Masonry support systems are usually designed with a gap of at least 10 mm between each length of angle. This provides flexibility to cater for horizontal adjustments during erection. Horizontal adjustment is achieved by slotted holes in the angles or the brackets. If a horizontal cast-in channel is used, this provides virtually unlimited horizontal adjustments. The setting out of support system components will generally be shown on the manufacturer's drawings.

VERTICAL ADJUSTMENTS

Vertical adjustment is catered for either by movement in the cast-in vertical channels or by vertical slots in the brackets. To ensure the masonry support systems are held securely in the vertical position, the surfaces allowing this vertical adjustment are serrated. These serrated plates must be installed in the correct orientation, to ensure the serrated teeth interlock as designed.



Serrated plates must be installed in the correct orientation.

FIXINGS

All fixing components in contact with the stainless steel support system should also be stainless steel. Only the components supplied with the masonry support systems should be used for installation. The recommended tightening torques from the fixing suppliers should be adhered to. Stainless steel bolts should not be over-tightened.

Ensure bolts are tightened to the correct

EDGE AND END DISTANCES

Edge and end distances will be detailed on the drawings supplied by the support system manufacturers. It is important that the minimum edge and end distances are observed.

Minimum edge and end distances should be observed.

WALL TIES

Stainless steel wall ties should be provided at a recommended maximum horizontal spacing of 450 mm within 300 mm above and below the support angle. These are essential to the correct working of the support system.

Wall ties are essential to the correct working of the masonry support systems and must not be omitted.

AVOIDANCE OF BI-METALLIC CORROSION

Bi-metallic (galvanic) corrosion can sometimes occur when stainless steel is fixed to carbon steel where water is present. Current best practice is to ensure that the carbon steel is painted or that an isolation gasket is inserted between the carbon steel and stainless steel. These are measures that are normally specified by the architect.

To prevent bi-metallic corrosion, stainless steel should be isolated from carbon steel.

CLEANING CHEMICALS

If the stainless steel support system requires cleaning, either soap, detergent or a solution of ammonia may be used with scrubbing brushes but then it should be rinsed with clean water and wiped dry. Strong acid solutions are sometimes used to clean the masonry and tiling but should not be allowed to come into contact with stainless steel. If this should happen, the acid solution should be washed off immediately with generous amounts of water.

Strong acid cleaning solutions should not be used on stainless steel.

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