

Crack Stitching Bars

Helically twisted **crack stitching bars** are used to reconnect and reinforce cracked masonry walls and brickwork. These 6mm profiled and twisted stainless steel bars are bonded across cracks in a wall to increase the tensile and flexural strength of masonry.

In use the high tensile (circa 8kN) reinforcing bars redistribute tensile forces along the full length of the helix and provided added resilience to shear loads to fully restore the stabilised structure to full strength.

Thor Helical **crack stitching bars** are manufactured in the UK to patented engineering tolerances and come in 1m and 2m lengths. To fix the helical reinforcement bars into walls you need: WHO60 Masonry repair grout, Helix mixing paddle, Finger trowel and a Grout Master mortar applicator.

How to Repair Cracked Walls

How do cracks in walls develop?

Cracks in walls are the result of movement beyond that which can be accommodated by the masonry construction materials. A wall tends to crack where masonry is over-stressed and least restrained, such as at window and door openings or at corners. Stress and movement is usually caused by variations in moisture content in the walls, or in the ground that supports them, temperature variations or chemical reactions. Some movements are cyclic and reversible, many are permanent.

Cracks in walls can be divided into three categories:

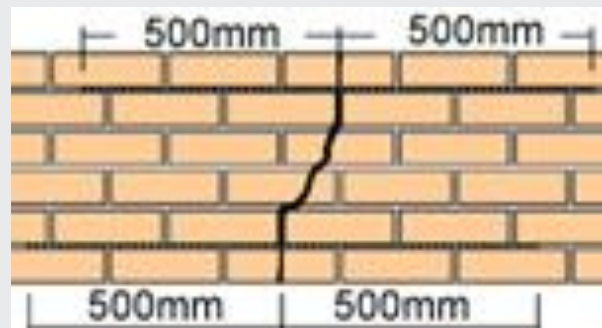
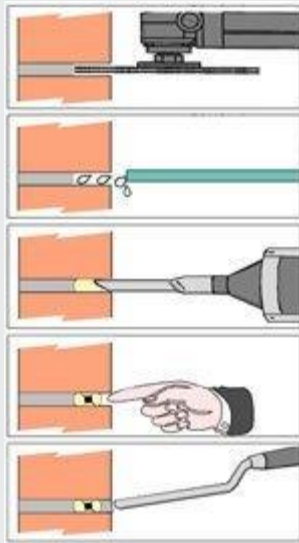
- active - cracks in masonry that are increasing in width and/or length
- passive - cracks in walls that are not increasing in width or length and
- cyclic - cracks in brickwork that open and close seasonally.



Unless one knows the history of the building, and knows that the cracks fall into the passive or cyclic categories, it can be difficult to determine the type of wall crack or the appropriate method of repairing it. Generally, cracks that are passive or cyclic and less than 5mm in width can be repaired by simple DIY brickwork stitching techniques that improve the tensile and flexural strength of masonry walls such as to accommodate small and/or cyclic movements. Repairing wall cracks that are active or that are greater than 5mm in width should only be carried out under the guidance of experienced tradesmen and structural engineer.

How to repair cracks in walls?

Shaped and twisted stainless steel rods are bonded into the walls, stitching the masonry across the cracks at regular intervals. The brick stitching system allows the cracked wall to behave as a reinforced non-fractured unit. Having a helical configuration the crack stitch rods physically interlock with the bonding agent and exhibit a unique and resilient torsional spring-like quality that allows small amounts of wall movement and recovery to occur without brittle failures.



How are wall stitching bars installed?

Installation is straight-forward. A horizontal channel is cut in the masonry, usually in the bed joint where installation can be easiest disguised. The slots are flushed with clean water immediately prior to the installation of high performance shrink-compensated WHO60 cementitious grout. Brick stitching bars are simply pushed into the grout, ensuring full encapsulation of the bars along their length. The helical bars extend 500mm each side of the cracks to dissipate loads and disperse them evenly into the wall structure.

When can resin be used to bond helical bars into masonry?

The use of resins for masonry crack stitching is discouraged unless the load potential on the helical bars is wholly axial (parallel to the helical rods). When used as a fully encapsulated bar-bonding agent for repairing cracked walls, resins do not cope well with shear forces (perpendicular to the rod) and should be avoided where there is cross-plane movement potential.

Is wall stitching appropriate for repairing active cracks?

On its own a masonry crack stitch repair system should not be relied upon to solve problems associated with 'active cracks'. Brick walls having fractures which are increasing in width and/or length or having fractures that open by more than 15mm require further investigation by an engineering professional. In such cases brick stitching bars should only be used for repairing cracks in walls when done so in conjunction with a full structural engineers repair specification that addresses the source of wall movement.

