

# Crack Stitching

Masonry crack repair systems utilise crack stitching bars to enhance the tensile, flexural and shear capacity of cracked walls.

Cracks in walls are the direct result of movement beyond that which can be accommodated by the construction materials. Typically wall cracks where masonry is overstressed and least restrained, such as at window and door openings or at corners. The movement that results in cracked walls is usually caused by variations in the moisture content of the masonry, or in the ground that supports it, temperature variations or by chemical reactions. Some movements are cyclic and reversible, many are permanent.

**Wall cracks in masonry can be divided into three categories:**

- **ACTIVE** - (a crack which is increasing in width and/or length)
- **PASSIVE** - (a crack which is no longer increasing in width or length)
- **CYCLIC** - (a crack in a wall which opens and closes seasonally)

Unless the history of the building is known and the cracks can be classified into the passive or cyclic categories, ascertaining the type and cause of cracks can be difficult and may need the input of a structural engineer. Monitoring of the cracked brickwork over an extended period of time may be required before an appropriate masonry repair strategy can be determined.

Generally, wall cracks that are passive or cyclic can be reinforced by simple crack stitching and masonry repair techniques that improve the tensile and flexural strength of cracked walls such as to accommodate small and/or cyclic movements.

Bed joint reinforcement bars are bonded into mortar joints, at regular intervals, usually 300mm to 450mm apart, to tie the masonry on each side of the crack.

Mortar joints are simply raked out to form slots that extend 500mm either side of the wall cracks. Each slot is thoroughly wetted prior to the application of a proprietary cementitious bonding agent. A crack repair bar is pushed into the bonding agent such as to fully embed the rod and implement crack stitch repairs without costly rebuilding work and with minimum inconvenience to the occupants.

This effective system of masonry crack repairs fully restores the integrity of cracked walls to their pre-cracked state and allows the masonry to behave as a reinforced non-fractured unit.





## Structural Repair Solutions using Thor Helical Remedial products

### CRACK STITCHING PRODUCTS

Stainless steel crack stitching bars are roll profiled and cold worked to an ultimate tensile strength that is twice that of rebar, four times that of epoxy glass-fibre rods and seven times that of flat twisted plate [ref: BRE GBG 62].

Having a helical configuration the high tensile crack repair rods physically interlock with the bonding agent, exhibiting a unique and resilient torsional spring-like quality that allows small amounts of cyclic movement and recovery to occur without brittle failures.

The angular faces of the helix redistribute tensile forces over the reinforced area to stabilise the wall structure, making the walls tougher, stronger in flexure and tension and less likely to crack.

Cementitious masonry repair grouts are the preferred bonding agents for retrospective masonry crack repairs and reinforcement. The use of resins for structural repairs by crack stitching is discouraged unless the load potential on the rod is wholly axial (parallel to the helical rod).

When used as a full length rod-bonding agent, for repairing cracked walls, resins do not cope well with shear forces (perpendicular to the rod) and their use for masonry crack repairs should be avoided where there is cross-plane movement.

