

Technical Specifications and Installation Instructions:

Description: Engineered structural system to stitch fractures in reinforced concrete

Steel Tang: Precision machined case hardened 1018 steel

Bridge Material: A-706 rebar

Corrosion Resistance: Hot-dip galvanized

Stitch Tensile Strength: 60,000 psi

Anchor: 2-1/4" x 5/8" custom order sleeve type

Horizontal Dimensions: 13-1/4" long x 1-1/4" wide x 3/8" thick

Bridge Length: 12" overall length extending 6" away from fracture

Hook Length: 2-1/4" wedged into concrete

Anchor Length: 2-1/4" wedged into concrete

Installation Spacing: 1-foot (can vary depending on crack severity)

Niche: Saw Cut Approx. 14-1/2" long x 1-3/8" wide x 1-1/2" deep

Tools:

4" Masonry Saw, Chipping Hammer, Hammer Drill, 1/2" and 5/8" Masonry Drill Bit, 3/4" Socket Wrench, Standard caulking gun, Shop Vacuum.

Installation:

Step A: Chase the crack with masonry saw and "V" cut to open crack approximately 3/4" wide. If the crack is leaking, fill it with Aquabond's **CR-2100-400 Non-Sag** Concrete Repair Compound or **CR-2000-400 Self-Leveling** Concrete Repair Compound, or equivalent products. (use the self-leveling product on flat, level cracks) If the crack isn't leaking, it may be filled with a rapid setting hydraulic cement such as SGM Pool Patch or Quikrete Hydraulic Water-Stop.

Step B: Locate stitches by tracing a rectangle 14-1/2" x 1-3/4" and marking the holes 12" apart on center. Using 1/2" masonry bit, drill the two holes approximately 4" deep.

Step C: To create the box niche, cut and chip approximately 1-1/2" deep rectangular area with masonry saw and chipping hammer. To improve the chipping operation and make cleaner box cuts, the rectangular area can be sliced with the saw along its length prior to chipping. Remove all debris, clean out completely. Open *one* of the holes with a 5/8" drill bit and verify that holes are 2-1/4" deep below niche bottom. Do not over-drill the hole depths.

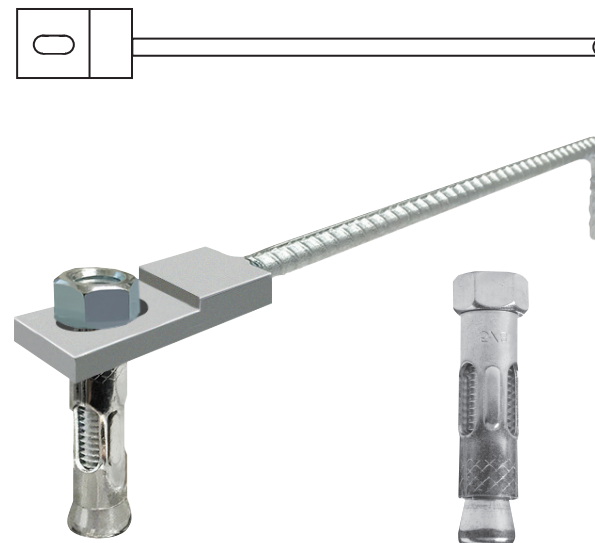
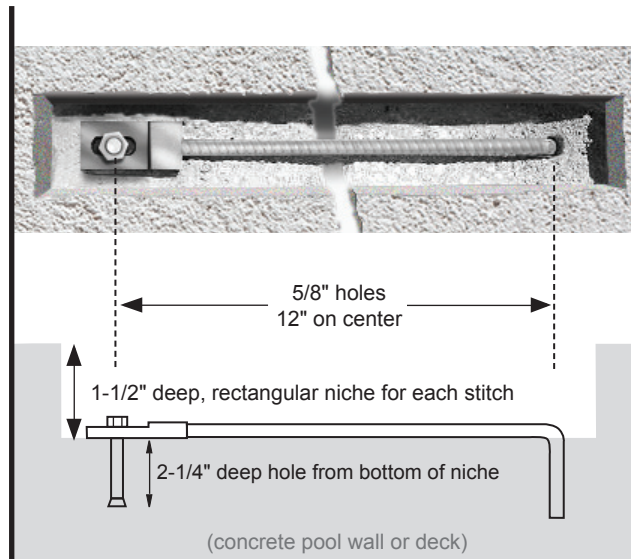
Step D: Inject AquaBond CR-2100-250 Anchoring Epoxy into both drilled holes. Place the sleeve anchor through the stitch and thread nut onto the topside of the shaft 3 or 4 turns. Insert sleeve anchor into 5/8" hole and the hook into the 1/2" hole then tap down the head of the nut until sleeve is fully inserted in the hole, and the entire stitch is flush in bottom of the niche.

Step E: Using a ratchet and 3/4" socket, tighten the nut on the anchor approximately 3 or 4 turns up to 50 Ft-Lb torque. Locate each stitch carefully. Mechanical Stitch installation is designed for permanent placement. Once installed and tightened down, the anchor cannot be easily removed or relocated.

Step F: Repeat above procedure with stitches spaced at approximately one foot apart along the length of crack (10 Aqua-Stitches for a 10-foot crack).

Step G: Fill each niche with non-shrink hydraulic cement. Finish pool with marble-based pool plaster or polymer modified cement for aquatic applications.

Note: A minimum 5" slab is recommended for Mechanical Stitch installation. For shallower slab thicknesses, drill the anchor hole and install and tighten the nut. Once tightened the threaded shaft may extend upward and can be ground down flush with the top of the nut.



Installation Recommendation:

For cracked areas that extend through the top of the beam, the installation spacing can be tightened to a stitch every 6" (minimum) rather than every 12". i.e., where wall crack terminates in top of beam, place one stitch under the coping - centered over the crack facing down - and place the next stitch 6"-8" below on horizontal wall surface. Stitches can be placed on back side of wall or beam if needed.

AquaStitch Technical Summary

To correct cracking of a beam or slab the American Concrete Institute (ACI 224.1R-07) outlines anchor stitching as desirable to strengthen the fractured area. As with any repair, the extent and cause must be identified and addressed.

The AquaStitch technique uses specially modified rebar stitches, anchored into solid concrete to bridge the crack and apply a compressive force over the fracture.

Stability is achieved by tightening the anchor on the machined tang applying force along the 12-inch long stitch and rebar hook.

The stitches bridge the crack by extending into the unaffected areas well into solid reinforced concrete. The mechanism is engineered to provide sufficient support across the affected area while minimizing migration to other parts of the slab.

When stitches are anchored into the rebar web cement areas, fewer loads are exerted on the weak surface substrate and are transferred into actual reinforced areas.

For a rigid, full-depth repair, epoxy is injected in the base of the crack under low pressure and the injected crack will be stronger than the adjacent concrete.

If active cracks are injected, other cracks can form next to or far away from the repaired crack unless you have sufficient amounts of reinforcing crossing the crack to restrain future movements.

The American Concrete Institute (ACI) guide covering this subject is available for additional information if needed.