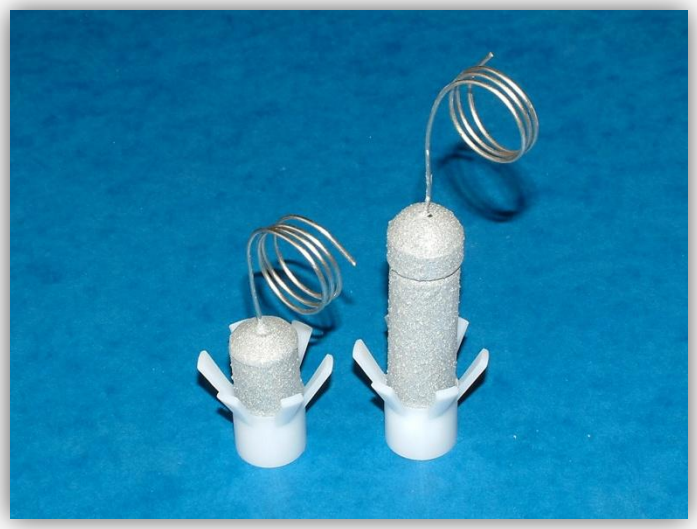
PATCHGUARD™ AND PATCHGUARD™ PLUS INSTALLATION GUIDELINES



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Installation Guide

PatchGuard™ /PatchGuard™ Plus

The installation methodology is outlined – modifications will be made for local site requirements and will be identified in the final specification.

1.0 Preliminaries

The structure should be assessed prior to application of the PatchGuard anode range technology as follows;

1. **Review of records:** All available drawings and recorded information should be reviewed for information relating to location, quantity, nature and continuity of reinforcement and to concrete quality.

2. **Inspection**: An inspection shall be carried out to ascertain the type, causes, and extent of defects and any features of the structure or its surrounding environment which could influence the effectiveness of the PatchGuard anode. In particular, defects associated with delaminations, cracks, honeycombing or construction joints should be identified.

3. **Chloride content** – The chloride content of the concrete should be determined, at typical locations.

4. **Reinforcement location/concrete cover**: Steel reinforcement size and location should be established to confirm details in the drawings.

Concrete cover of the area to be protected should be determined to ensure a minimum cover of at least 20mm for the purposes of installation of the DuoGuard™ hybrid anode™ system.

5. **Reinforcement continuity**: Electrical resistance measurements to be performed to establish continuity of steel reinforcement/other metallic components on the structure. Any discontinuous components should either be treated as a separate zone or bonded to the main steel reinforcement.

6. **Concrete repairs**: Any concrete repairs previously undertaken on the structure should be assessed to ensure electrical resistivity is in the range 50 to 200% of the parent concrete

7. **Stray currents**: The structure should be assessed for the presence of ac or dc stray currents. If stray currents are evident, remedial action must be undertaken under the auspices of a competent electrical/corrosion engineer.

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2.0 Installation

1. Break-out the concrete in the areas in which PatchGuard anodes are to be installed. Concrete break-out will follow the guidelines in EN1504, including concrete removal from behind the steel reinforcement.

2. Having exposed the steel reinforcement to be repaired within the patch, a location for the PatchGuard anodes should be identified, as close as is practically possible to the edge of the patch.

3. Confirm steel continuity in areas to be treated. If steel is discontinuous, it should be dealt with as detailed in (5) above.

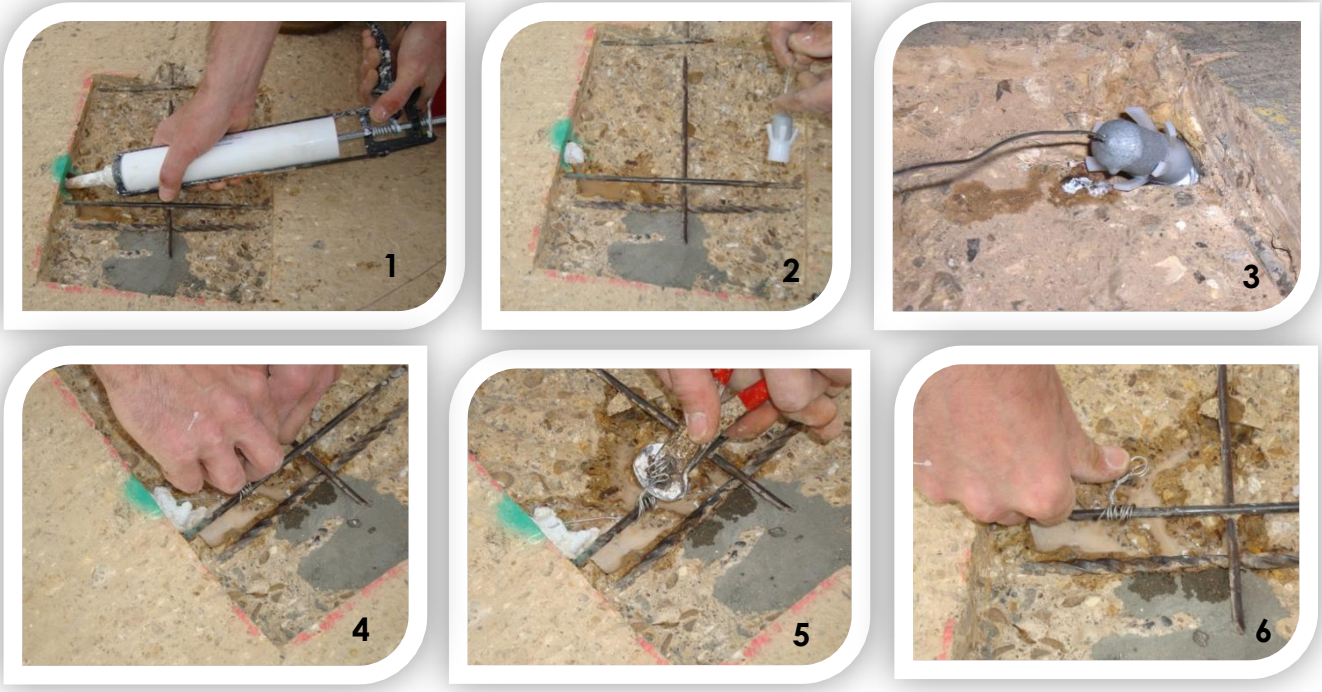
4. Clean the steel in the vicinity of the proposed PatchGuard unit location, to facilitate electrical connection of the anode.

5. Drill holes into the parent concrete at the sides of the patch, making sure to avoid steel contact. Anode spacings will depend on steel density.

6. Soak the holes for 15 minutes before removing any excess water.

7. Apply DuoCrete PG Mortar to the holes and push the PatchGuard units in, ensuring that the whole anode surface is covered and that there are no air voids.

8. Using the twist tie tool and stainless steel wire ties, attach the anode wire to the pre-cleaned steel surface. Alternatively, use a plastic cable tie.



9. The electrical resistance between the tying point on the PatchGuard anode and the reinforcing steel should be confirmed to be <1ohm using a suitable meter. If the resistance is >1ohm then the PatchGuard anode tying point should be removed, the reinforcing steel should be cleaned, and the PatchGuard anode tying point re-installed. This process shall be continued until a resistance <1ohm is achieved.

The electrical resistance of all anodes should be recorded as follows;

Unit	Date tested	Electrical resistance/ohm

A copy of this data shall be handed to the engineer/client and Concrete Preservation Technologies Ltd at the end of the project.

10. The patch repair can then be filled in as normal using a suitable repair material whilst ensuring that the PatchGuard unit is not disturbed.