

## INSTALLATION GUIDELINES

### Galvex 60 & 100 Hybrid Anode

Zinc sacrificial anodes for corrosion control of steel in concrete.



### Installation procedures

The Galvex Hybrid is a compact zinc anode embedded in an ionically conductive auto moistening paste and a conductive geo-polymer mortar, for cathodic protection of reinforced concrete structures.

It is supplied ready for immediate installation.

System monitoring can be performed according international standard EN/ISO12696. Monitoring equipment can be supplied by your distributor together with the anodes on request. Be aware that monitoring equipment designed for an impressed current CP-system is not always compatible with a CP-system based on galvanic anodes, specifically when current-densities are monitored.

### Procedure

1. Check accessibility of the construction and take precautions if necessary
2. Prepare the concrete surface
3. Localize the reinforcement
4. Check electric continuity of the reinforcement  
(Not necessary for patch anodes)
5. If required, perform additional potential mapping of the reinforcement to indicate the degree and extend of expected corrosion
6. Install the Galvex Hybrid discrete anodes
7. Make electric connections of the reinforcement with the anode
8. Check electric connections with a resistance meter
9. Patch the concrete
10. Check polarisation of the reinforcement by use of reference electrodes

It is recommended to keep up a log-book in which all steps are described and checked. Situations which differ from the installation procedures must be indicated accurately in the log-book and checked and signed by the supervisor prior to proceed.

If certain situations are unclear regarding the proper handling of the anodes, we recommend contacting your distributor before proceeding with the installation. Each step of the installation procedure is described in detail below.

### Surface preparation

Prior to installing the anodes the concrete should be prepared in the following manner (*please check manufacturer's spec of the repair mortar*):

1. Remove all deteriorated concrete, dirt, oil, grease, and all bond-inhibiting materials from surface.
2. In case the depth of the repair area is less than 1.5cm and cannot be enlarged for proper anode installation, please contact your supplier.

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3. Preparation work should be done by high pressure water blast, scabbler, or other appropriate mechanical means to obtain an exposed aggregate surface with a minimum surface profile of 2mm for proper mortar adhesion.

4. Steel reinforcement should be thoroughly prepared by mechanical cleaning to remove all traces of rust at least there where the anodes are installed. Where corrosion has occurred due to the presence of chlorides, the steel should be high pressure washed with clean water after mechanical cleaning.

### Localize the reinforcement (if necessary)

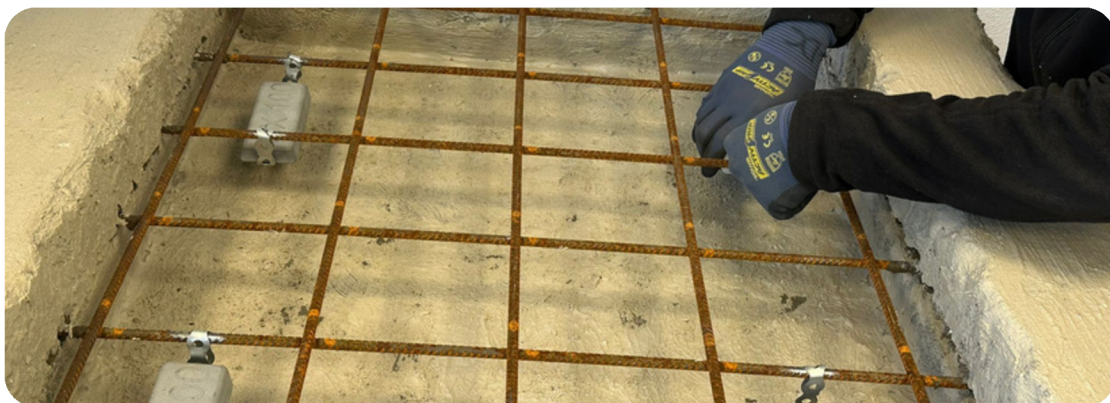
The best and easy way to localizing the reinforcement is by use of rebar locator, which accurately locates reinforcing bars and welded wire meshes. Some rebar locators also measures the concrete cover and determines the diameter of the bars. A list of suppliers can be forwarded by your supplier upon request.

### *Additional potential mapping (if required)*

*If a selective approach is desired due to economic reasons potential mapping of all concrete elements involved should be considered.*

*During mapping the values are logged as computer-tables and later on, with special software, processed as corrosion-graphics. This type of software analyses potential-values and gradients, and calculates for each measuring location the possible chance of active corrosion. After the interpretation the results are presented as colour-cards. By using this measuring method hundreds of square meters of concrete surface per hour can be mapped and processed.*

*For further information about this technique and making the right interpretations, please contact us or your local distributor.*



### Install the Galvex Hybrid Anode

Place and fasten the anodes securely on the steel bars so they will not move and loosen during the repair mortar application or concrete casting. Be aware of enough spacing between the anode and the existing concrete. In that way the repair mortar or concrete can easily force its way around the anode and create a good adherence with the paste for sound electrolytic continuity between the anode and the concrete structure.

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### Connect anode to reinforcement

Durable connections to the reinforcement can be achieved in various ways.

The preferred method is welding, as it ensures a long-lasting and reliable bond. It is essential that the contact to the rebar is made properly, since the connection must remain effective for the entire design life.



### Patch the concrete

Use non-shrink, fiber-reinforced and CP approved repair mortars (CorroFix RM) according to EN/ISO12696.

Before applying the mortar saturate the concrete surface with clean water. Substrate should be saturated but surface dry with no standing water. Be aware that the mortar will make good contact with the anode all the way around and between the anode and the rebar.



### Check electric connections with a resistance meter

Each electric connection of the anode with the rebar is checked in a similar way as further described below.

After making the right connection check the electric resistance of the connection using a digital multimeter. Switch the multimeter to the resistance position ( $\Omega$ ) and measure the resistance. The criterion for this is less than 1  $\Omega$  (DC-) resistance.

Instead of making the contact directly on the connection strip, it could be checked by making contact with the current distributor bar of the anode and the reinforcement.





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### Measure polarisation

If required reference electrodes (RE) which are suitable for concrete are applied for monitoring purposes. Reference electrodes can be supplied together with the Anodes upon request. For proper data storage and data interpretations contact our distributor or refer the international standard EN/ISO12696.



### Pitfalls

**Improper connections** This is the most critical aspect of your CP or anode system. If the connections are not made correctly, they may deteriorate over time, causing the anode to stop functioning and the structure to lose its protection.

#### Proper embedding

The Galvex Hybride anode must be fully embedded in mortar to ensure good electrolytic contact with the surrounding concrete. If this step is not performed correctly, the anode may not operate at its full potential.

All technical data stated in this Technical Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control. The information, and, in particular, the recommendations relating to the application and end-use of CorrPRE's products, are given in good faith based on CorrPRE's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with CorrPRE's recommendations.

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**Revision Nr.:** 05

**Revision date:** 11-11-2025

**Approved by:** R. Giorgini