

Galvanic Jacket for the protection of corroding columns and piles

Description

The Galvashield LJ galvanic protection system is designed to provide a low cost reliable method of extending the service life of corroding columns and piles in marine or non-marine environments. The Galvashield LJ system is comprised of galvanic zinc anodes placed around the structure to be protected inside an optional FRP jacket with the anode embedded in portland cement concrete or mortar. Unlike traditional concrete jackets, epoxy grouted jackets, and wraps, the Galvashield LJ provides on-going galvanic current to address active corrosion.

The system is self-powered and regulates its current output according to the corrosion rate of the steel and its operating environment. Marine jackets for tidal and splash zone protection can be provided with standard zinc mesh anodes. For this application, bulk zinc anodes are recommended for supplemental protection below mean low tide. Activated zinc anodes are supplied for jackets designed to protect areas above the tidal or splash zones or for jackets used in non-marine applications. Either type of anode may be pre-installed inside the fiberglass jacket or the components may be supplied separately. In many cases, field installation of individual components may be simpler and more easily adapted to suit variable site conditions.

The Galvashield LJ system is simple to install and most work can be completed while the structure remains in service. The system requires no maintenance, no extensive column preparation prior to installation, and restores concrete loss due to steel corrosion and concrete spalling in one operation. Galvashield LJs can be supplied as round or square jackets, flat panels or custom shapes in lengths suited for the project.

Applications

- Structures subject to chloride contamination
- Harsh chemical exposure
- Prestressed concrete piling
- Steel H piles
- Bridge columns



Galvashield LJ provides protection to piles

Features and Benefits

- Versatile - can be used to protect steel or concrete structures (conventionally reinforced or prestressed/ precast) in marine and non-marine applications. Available in standard and custom sizes.
- Low maintenance - requires no external power source or system monitoring.
- Structure-specific design - each system is tailored to the environment and service life expectations.
- Less self-corrosion - zinc embedded in concrete matrix minimizes premature anode consumption.
- User friendly - installation is quick and easy. Repair spalled concrete and provide lasting protection in one step. No costly electrical work required.
- Measurable - anode performance can be easily monitored if required.
- Long Lasting - 10 to 35 year service life* as required.
- Enhanced aesthetics - FRP jackets are available in a range of colors to suit project requirements.
- Minimal downtime - system can be generally installed without major disruption of operations.

* As with all galvanic protection systems, service life is dependent upon a number of factors including reinforcing steel density, concrete conductivity, chloride concentration, humidity and anode mass.

Level of protection	Description	Galvashield LJ
Corrosion Prevention	Preventing new corrosion activity from initiating	✓
Corrosion Control	Significantly reducing ongoing corrosion activity	✓
Cathodic Protection	Highest level of protection intended to stop on-going corrosion activity	✓

Specification

Contact Parchem for assistance in developing job-specific specifications.

How It Works

When two dissimilar metals are coupled together in an electrolyte, the metal with the higher potential for corrosion (more electronegative) will corrode in preference to the more noble metal.

In concrete repair applications, the zinc anodes in Galvashield LJ systems will corrode in favor of the reinforcing steel, thus providing corrosion protection.

Galvashield® LJ

Installation Instructions

Installation of the Galvashield LJ system can be accomplished with relative ease. The first step is to remove any deteriorated concrete with pneumatic hammers and any marine growth (if applicable) using methods approved by the engineer. Once the corroded steel is exposed and all loose concrete has been removed, the surface of the column is prepared by grit or hydro blasting to clean the concrete and remove all corrosion products from the steel.

An electrical connection must be made to the reinforcing steel that is to be protected. Electrical connection can be made to exposed reinforcing steel. If no exposed steel is present, a concrete excavation will be required to make the reinforcing steel connection. In order for the system to work properly, the steel reinforcement must be electrically continuous. If not, electrical continuity must be established.

The galvanic jackets may be supplied pre-assembled or the optional fiberglass jacket and galvanic anode components may be provided separately. If the galvanic anodes are supplied separately, they are installed parallel to the existing concrete surface using the fasteners and spacers provided. If specified, the bulk anode is installed below the low tide line. All wiring from the zinc anodes and the bulk anode are run up inside the jacket into the junction box.

The jacket component of the Galvashield LJ system is a fiberglass jacket assembly with tongue and groove joint(s). The jacket is set on a temporary bottom form and is positioned around the column and the zinc anodes. The tongue and groove joint is sealed using a 100% solids epoxy adhesive and stainless steel fasteners.

To complete the installation, the fiberglass Galvashield LJ form is braced and filled with approved cement-based grout or concrete to completely encase the zinc anodes. Once the grout is cured, the lead wires from the anode in the jacket, bulk zinc anode and reinforcing steel connection are connected in the junction box and the system becomes immediately operational. The continuous flow of current from the zinc anodes provides galvanic corrosion protection to the reinforcing steel.

Precautions

Galvashield LJs, if appropriate, may be part of an overall structure rehabilitation program to extend the service of life of corroding columns and piles. Where structural damage exists, consult a structural engineer.

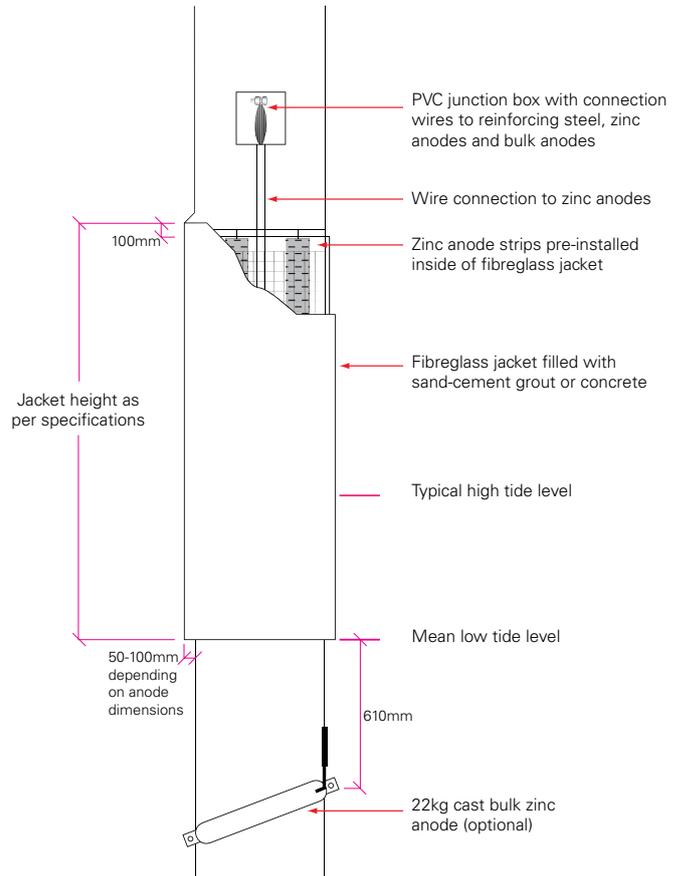
Important notice

A Safety Data Sheet (SDS) and Technical Data Sheet (TDS) are available from the Parchem website or upon request from the nearest Parchem sales office. Read the SDS and TDS carefully prior to use as application or performance data may change from time to time. In emergency, contact any Poisons Information Centre (phone 13 11 26 within Australia) or a doctor for advice.

Product disclaimer

This Technical Data Sheet (TDS) summarises our best knowledge of the product, including how to use and apply the product based on the information available at the time. You should read this TDS carefully and consider the information in the context of how the product will be used, including in conjunction with any other product and the type of surfaces to, and the manner in which, the product will be applied. Our responsibility for products sold is subject to our standard terms and conditions of sale. Parchem does not accept any liability either directly or indirectly for any losses suffered in connection with the use or application of the product whether or not in accordance with any advice, specification, recommendation or information given by it.

Galvashield LJs may be used in conjunction with Parchem's extensive line of galvanic corrosion protection products to protect other portions of the structure. For more information, on corrosion mitigation strategies and options, contact Parchem.



Health and Safety

As with all cement-based materials, contact with moisture can release alkalis which may be harmful to exposed skin. Activated Galvashield LJ anodes should be handled with suitable gloves and other personal protective equipment in accordance with standard procedures for handling cementitious materials.

