



CORROSION CONTROL



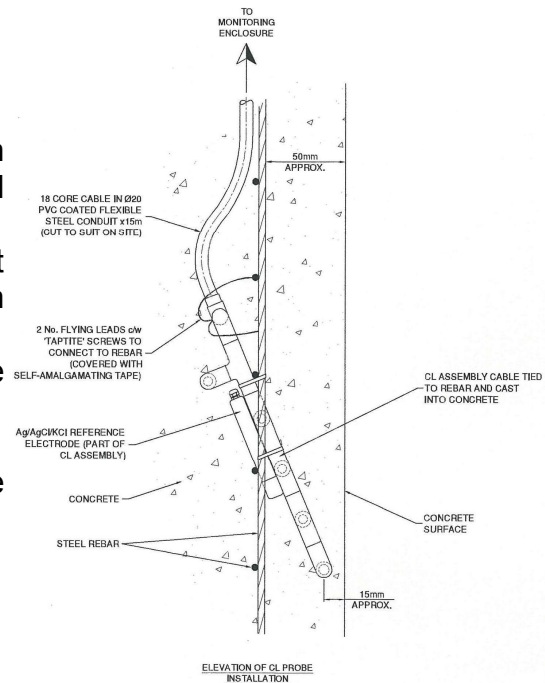
MULTI-DEPTH, MULTI-ELEMENT CL CORROSION MONITORING PROBE

“MONITORING YOUR STEEL REINFORCEMENT”

The 'Type CL' corrosion monitoring probe is an advanced embeddable corrosion rate probe for use on NEW structures. Its unique design – four independent Linear Polarisation Resistance (LPR) electrodes at varying levels of concrete cover – allow the determination of a variety of parameters relating to the condition of the structure. These data can be analysed to provide an indication of the rate of ingress of corrosive substances into the concrete and hence estimates can be made regarding the potential life of the structure.

Functions

- Corrosion Rate measurements at each of the four electrodes plus main steel reinforcement
- Corrosion Potential measurements at each of the four electrodes plus main steel reinforcement
- Electrical Resistance (between three pairs of electrodes)
- Temperature of probe
- Estimation of rate of ingress of corrosive substances



Features

- Four (4) carbon steel elements
- Two (2) flying lead steel reinforcement connections
- Stainless steel auxiliary electrode
- Ag/AgCl/KCl reference electrode
- 2nd stainless steel monitoring pseudo-reference electrode
- PT100 platinum resistance thermometer
- Robust polycarbonate construction
- Integral cable with protective flexible conduit

Applications

Type CL probes can be installed in any new steel-reinforced concrete structure where long term concrete performance monitoring is required. For example:

- Road decking (de-icing salts cause accelerated decay)
- Tunnel walls (monitor seepage from bedrock)
- Water intake structures
- Marine structures such as piers, jetties, docks & caissons
- Nuclear installations & storage facilities
- Buildings in corrosive environments

Type CL corrosion rate monitoring probes are designed to be used in a corrosion monitoring system in conjunction with LPR measurements (see separate datasheet). LPR probes form the basis of the system with CL probes being installed in pertinent locations where corrosion activity is expected to be high or unpredictable.

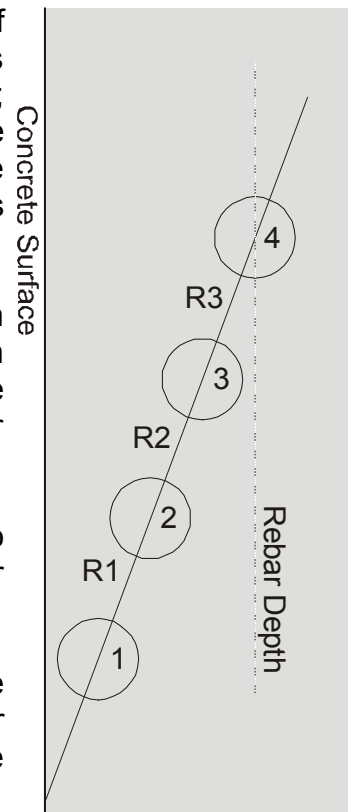
Theory of Operation

The probe is usually installed at an angle to the surface of the concrete as in the diagram. Each of the elements (numbered 1-4) is at increasing distances from the surface; hence any corrosive substances penetrating the concrete arrive at the electrodes sequentially. A sequential increase in corrosion rate over the probe elements 1 to 4 indicates the progressive ingress of corrosive substances.

Concrete electrical resistance can be measured between pairs of adjacent elements. This augments the corrosion rate data to provide an indication of the rate of corrosive substance ingress i.e. chloride ion ingress from seawater exposure.

A temperature measuring device (PT100) is included to allow for temperature related variations in corrosion rate or electrical resistance to be factored out.

Electrical connections to the rebar allow LPR corrosion rate and corrosion potential to be measured. Initially, after casting, it can be assumed that the corrosion rates of the rebar and the four elements will be similar.



After casting, initial corrosion rate data can be used to calibrate the probe to account for the differing measured corroding surface area of the rebar and the elements, and as the element area is known accurately, henceforth a more accurate corrosion rate of the rebar can be calculated.

Specifications

- 25mm diameter Ag/AgCl/KCl 0.5M reference electrode
- Stainless steel auxiliary electrode & pseudo reference electrode
- Approx 180x130x75mm in size (excluding cable)
- Compatible with BAC Corrosion Control Ltd and BGB Projects Ltd's testing instrumentation
- Available with 21-core cable in four different lengths.
- Used for estimating corrosion potential, corrosion rate of steel reinforcement and carbon steel element.
- Optional PT100 temperature measurement device
- Robust construction designed for casting into concrete.



Part numbers: CL Ladder Probe with 5m cable–	160 004 0199
CL Ladder Probe with 10m cable–	160 004 0220
CL Ladder Probe with 15m cable–	160 004 0221
CL Ladder Probe with 20m cable–	160 004 0222



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