BUCKLEYS

MANUFACTURERS OF SPECIALIST TEST EQUIPMENT

Marine Silver/Silver chloride reference cell/ Survey Kit

Operating Instructions

English Version

Please read carefully before use

Contents

Description

The Marine Survey Kit comprises a weighted silver/silver chloride half-cell, plastic cable spool and an accurate multimeter. The kit has been specially created to include all items required to easily carry out a corrosion survey of marine structures.

The half-cell is housed in a PVC body with holes to allow the easy flow of water across the cell. The half-cell is weighted to help keep it in position. The cell is connected to the cable spool by CSP 55/015 cable 75m of cable (6004-0044) or 150m lead on a reel (6004-0093). The cell (not weighted) can also be supplied with a 12.5m of CSP 55/015 cable (6004-0026)or 25m cable (6004-0127).

Two other leads are supplied to connect the spool and the structure to the accurate multimeter. In use the multimeter is connected to the structure (+ terminal) and the cable spool (- terminal).

The half-cell is then lowered into the sea at the desired position. Turning on the multimeter to the 2V DC voltage range will display the corrosion potential.

Technical data

Multimeter

3½ Digit LCD DC, AC, Voltage & Current Ranges

DC Accuracy:	± 0.5%
AC Accuracy:	± 1.2%

Half-cell

Size:	140mm long x 25mm diameter
Output:	≈ +250mV VS SHE
Temperature coefficient:	-0.6mV °C
Temperature range:	0 - 30 °C

Unpacking

The Marine Reference Cell comprises:

- 1 x Silver/Silver Chloride reference cell (12.5m or 25m non-weighted)

The Marine Survey Kit comprises:

- 1 x Multimeter with operating instructions *(Note: copies cannot be supplied)*
- 1 x Silver/Silver Chloride weighted half-cell on a cable spool
- 1 x Black lead with a 4mm plug on each end
- 1 x Red lead with a 4mm plug on one end and a crocodile clip on the other

Operation

i. If the half-cell is new or has not been used for a long time it should be soaked in a plastic bucket of clean seawater for about 2 hours.
ii. It may need longer if the half-cell is very dry.
iii. Turn on the multimeter and check that the battery is OK, see instruction supplied with meter.
iv. Connect the black lead to the cable spool and to the terminal marked Com (- terminal) on the multimeter.
v. Connect the red lead with the crocodile clip to the terminal marked 'V' (+ terminal) on the multimeter.
vi. Switch the multimeter to the 2 volt (2000mV) DC range (see instructions supplied with meter).
vii. With the half-cell still in the bucket of seawater put just the tip of the crocodile clip into the water. The reading on the multimeter should change from 0.000V to about -0.600V. This shows that the half-cell and multimeter are working and that the leads are connected correctly.

Surveying

Decide where on the structure the readings are to be taken. For consistency the reading should be taken in the same place at the same state of the tide, if applicable, and at the same depth. This will allow changes to be readily spotted. Always consult a corrosion engineer to interpret the results.

i. Lower the half-cell into the water to the required depth.
ii. Connect the crocodile clip to the structure making sure there is a good bare metal connection.
iii. Switch the multimeter to the 2 volt (2000mV) DC range and the corrosion potential will be displayed.
iv. Record the location, reading and any other information required. v. Retrieve the half-cell and disconnect the crocodile clip.
v. Move to the next location and proceed from step 1 again until all the readings have been taken.
vi. When surveying is complete turn off multimeter and disconnect all leads.
vii. The outside of the half-cell can be dried using a cloth and then be left to dry naturally. Do not immerse the half-cell in fresh water as this will cause the reading to be inaccurate. Any areas cleaned to bare metal should be painted over.

Storage

Laying-up

If the Marine Survey Kit is not to be used for a long time, greater than 3 months, then the following procedure should be used.

i. Unwind the cable from the spool and wash using fresh water to remove any salt incrustation, then dry using clean cloth. Do not immerse the half-cell in fresh water.
ii. Wipe the outside of the half-cell casing using a damp cloth and dry. If the half-cell has been used recently then allow it to dry naturally for 48 hours at room temperature.
iii. Remove the batteries from the multimeter, see instructions supplied with the multimeter. Discard the old batteries.
iv. Pack in a cardboard box along with this manual and the multimeter manual. Do not put the half-cell in a plastic bag.

Re-commissioning

i. Fit new batteries into the multimeter, see instructions supplied.
ii. Soak the half-cell in a plastic bucket of clean sea water for about 2 hours. It may take longer if the half-cell has not been used for a long time.
iii. Connect the black lead to the cable spool and to the terminal marked 'Com' (- terminal) on the multimeter.
v. Connect the red lead with the crocodile clip to the terminal marked 'V' (+ terminal) on the multimeter.
vi. Switch the multimeter to the 2 volt (2000mV) DC range (see instructions supplied with meter).
vii. With the half-cell still in the bucket of sea water, put just the tip of the crocodile clip into the water. The reading on the multimeter should change from 0.000V to about -0.600V. This shows that the half-cell and multimeter are working and that the leads are connected correctly.

Calibration

The Multimeter can be checked against another meter and a 1.5 volt AA battery. Both meters should read the same battery voltage. If this is not the case, a replacement meter should be used.

The half-cell can be checked against a K-SAT reference cell (6004-0111). Connect the half-cell to the positive terminal of the multimeter and the K-SAT reference cell to the negative terminal.

With the half-cell in a bucket of clean seawater place the tip of the K-SAT reference cell into the water. The multimeter should read +54mV ±10mV with a water temperature of 25°C.

Disposal information

Producer registration number: WEE/HJ0051TQ

This Product must be disposed of in accordance with UK WEEE Producer Responsibility Regulations, or in accordance with your local WEEE guidance.

For further information on UK WEEE regulations click on:
http://www.gov.uk/government/collections/producer-responsibility-regulations

Contact Details

Manufacturer: Buckleys (UVRAL) Ltd

Address: Buckleys House
Unit G, Concept Court
Shearway Business Park
Shearway Road
Folkestone
Kent CT19 4RG, UK

Tel: +44 (0)1303 278888

Website: www.buckleysInternational.com

Distributor details

5830-0016 IM/ENG/V07/22