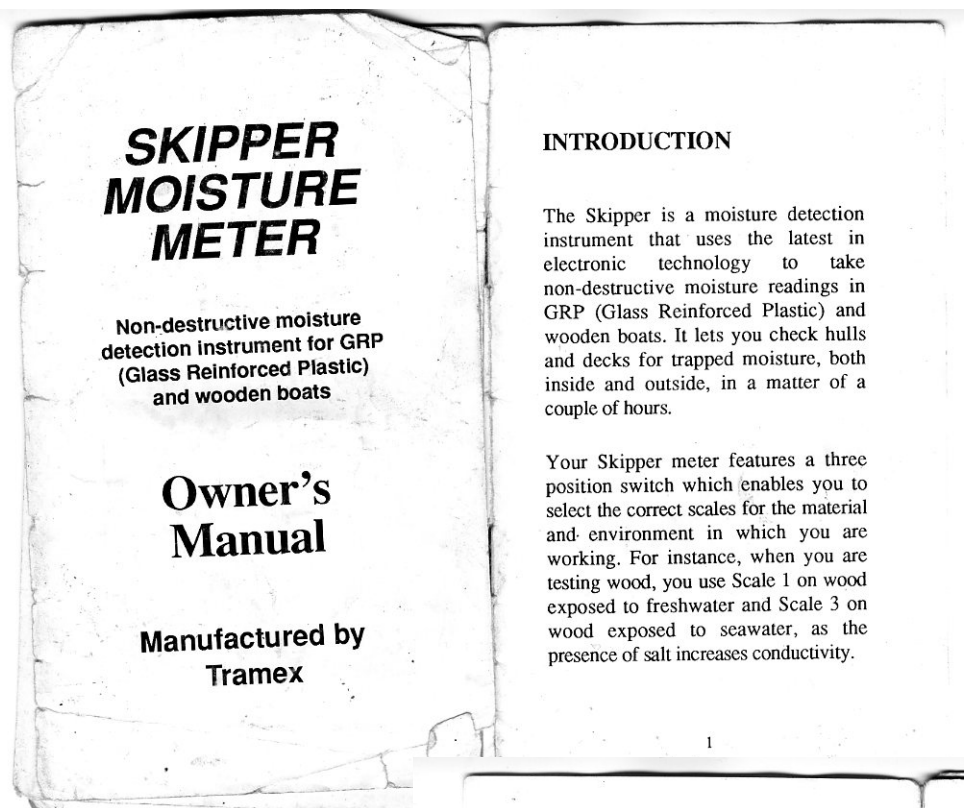




Svenska
Kryssarklubben



Västskustkretsens tekniska kommitté
Skannad i april 2015 av Tomas Wahlberg
Sid 1 av 3



INTRODUCTION

The Skipper is a moisture detection instrument that uses the latest in electronic technology to take non-destructive moisture readings in GRP (Glass Reinforced Plastic) and wooden boats. It lets you check hulls and decks for trapped moisture, both inside and outside, in a matter of a couple of hours.

Your Skipper meter features a three position switch which enables you to select the correct scales for the material and environment in which you are working. For instance, when you are testing wood, you use Scale 1 on wood exposed to freshwater and Scale 3 on wood exposed to seawater, as the presence of salt increases conductivity.

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The Skipper uses the very sensitive Scale 2 for testing GRP hulls when the gel coat has been removed to repair osmosis damage and where complete dryness is essential to ensure the successful application of the new paint system.

HOW IT WORKS

With the two rubber electrodes on the base of the Skipper held against the surface, low frequency AC signals are transmitted into the material being tested.

When no moisture is present, the signals are insulated from one another and the instrument reads dry. When moisture is present, the resistance between the signals is reduced and the Skipper determines the extent of this moisture by measuring the strength of the resistance between the signals.

Your Skipper has the ability to measure GRP or wood in fresh water or seawater conditions.

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The readings for moisture in wood are given in percentage by weight on the upper scale.

All other readings are relative and are taken on the lower scale.

It is important to remember that your Skipper is designed to give a comparable reading between wet and dry, and identify water when it should not be there.

TO OPERATE

1. Switch on by sliding on/off switch forward. The flashing red LED will indicate battery strength. If light remains constantly on without flashing, replace 9 volt PP3 battery.

2. Select the following scales as appropriate:

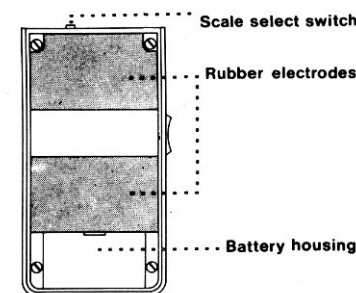
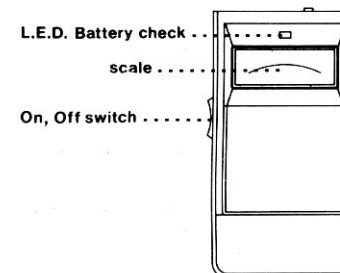
Scale 1: When testing for moisture in wood which has been exposed to freshwater and also to GRP exposed to either fresh water or seawater.

Scale 2: This low moisture scale is extremely sensitive and is used when it is necessary to ensure a material is completely

dry. As for instance when monitoring osmosis repairs on GRP prior to the application of a new two pack filler and paint system.

Scale 3: When testing wood which has been exposed to seawater, which is much more conductive than fresh-water owing to the presence of salts.

3. Hold the Skipper against the surface, making sure your fingers do not touch the rubber electrodes. On a smooth surface, the Skipper can be slid along quickly. The audio signal will sound when the needle enters the yellow segment of the meter.



DIAGNOSIS

Your Skipper can be used to diagnose moisture penetration which causes osmosis in GRP boats and wet rot in wooden boats).

OSMOSIS IN GRP

Osmosis is a general term used to categorise a condition where GRP degrades under water. This degradation is caused by water penetrating the gelcoat and reacting chemically with uncured resins or binders in the GRP lay-up. Once reaction takes place, pressure builds up and eventually blisters form. Osmosis is almost always found on the underwater area of the hull or immediately above the waterline. If the Skipper gives a high reading, examine the surface for blisters by removing a section of anti-fouling.

Blistered sections of the gelcoat should be removed by grinding or shot-blasting and then washed with clean water. The Skipper can be used to monitor drying-out prior to rebuilding the surface with fillers and epoxy paint. A calculation chart for moisture in GRP is given on page 10.

Note: Figures are based on Report No. 4462 prepared by Eolas, the Irish Science and Technology Agency. A full copy is available on request. As readings can be affected by density, conductivity, depth and thickness, these figures should be used as a guide only. Tramex Ltd. cannot accept responsibility for incidental or consequential damage or cost caused as a result of using this instrument.

Skipper MOISTURE METER for Boats

CALIBRATION CHART

GRP (FIBREGLASS)

Percentage of Moisture Content of Shot-Blasted (SB) and Non-Shot-Blasted (NSB) GRP hull 10/12 mm thickness.

Relative Scale	Range 1		Range 2	
	SB	NSB	SB	NSB
20	1.3	1.8	0.5	0.9
30	1.5	2.4	0.75	1.1
40	1.8	2.8	1.0	1.3
50	2.0	3.2	1.25	1.6
60	2.3	3.6	1.4	1.8
70	2.6	4.0	1.5	2.0
80	2.9	4.4	1.75	2.2
90	3.0	4.8	2.0	2.5
100	3.5	5.2	2.5	2.7

WOOD

Range 1 for wood in fresh water

Range 3 for wood in salt water

Read percentage content of dry weight off top scale

WOODEN BOATS

Read from the top scale marked %H₂O wood which gives percentage of moisture by weight from 10 to 20.

For boats used in freshwater, use Scale 1.

For boats used in seawater, use Scale 3.

In wooden boats, excess moisture trapped beneath layers of paint or within joints in keel, bow etc. can lead in time to wet rot.

As with a GRP boat, your Skipper can be used for an annual examination of the hull above and below the waterline, the deck and inside the boat.

Always ensure the wood is dry before painting otherwise you can be storing up trouble.



IMPORTANT

Always drain water from bilges before inspecting a boat as water within the hull could be picked up by your Skipper.

Do not be alarmed if you get a slightly higher reading on some species of hardwood, such as teak. This is caused by the greater density of the wood. Do, however, take note if different areas of the same timber give higher readings, as this would indicate moisture penetration.

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LIMITATIONS

It must be noted that your Skipper will not operate through a conductive surface such as copper sheathing or metal fittings build into the hull.

LIMITED WARRANTY

Limited warranty covers repairs resulting from defects in materials or workmanship for a period of one year from date of purchase. At Tramex Limited's discretion, the unit will be repaired or replaced free of charge. The purchaser shall bear all shipping, packing and insurance costs to the repair centre. The warranty does not apply if the instrument has been misused, abused or altered.

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In common with other electronic moisture meters, the information provided by the meter readings can be affected by a number of variables so the readings must be evaluated on the basis of professional knowledge and the users skill and judgement. The manufacturer cannot accept responsibility for any loss, consequential or directly related to the use of this instrument.

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OTHER PRODUCTS MANUFACTURED BY TRAMEX:

- Moisture Encounter
for checking wood, brick, plaster and roofing.
- Wood Encounter
non-destructive testing of wood
- Concrete Encounter
non-destructive testing of concrete
- Compact
probe meter for wood
- Professional
digital meter for wood
- Dec-Scanner
non-destructive roof surveys
- Leak-Seeker
non-destructive meter for leak tracing in roofing
- Building Inspection Kit
for complete building surveys

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For further information:

**TRAMEX LTD.
CHAMCO HOUSE,
SHANKILL,
CO. DUBLIN, IRELAND.
Tel: (01) 282 3688 Int. (353-1-)
Fax: (01) 282 6311**

MANUFACTURED BY

**TRAMEX LTD.
STATION HOUSE,
SHANKILL BUSINESS CENTRE,
SHANKILL,
CO. DUBLIN, IRELAND.
TEL: 353-1-282 3688
FAX: 353-1-282 7880
E-MAIL: tramex@iol.ie
WEB SITE: www.tramexltd.com**