

## Operating manual Analogue refractometer

KERN ORA 1 SA Seawater salinity  
ORA 3 SA NaCl% Brix%

### KERN & Sohn GmbH

Ziegelei 1  
D-72336 Balingen  
E-Mail: info@kern-sohn.com

Tel: +49-[0]7433-9933-0  
Fax: +49-[0]7433-9933-149  
Internet: www.kern-sohn.com



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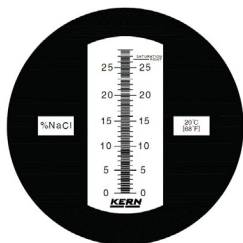
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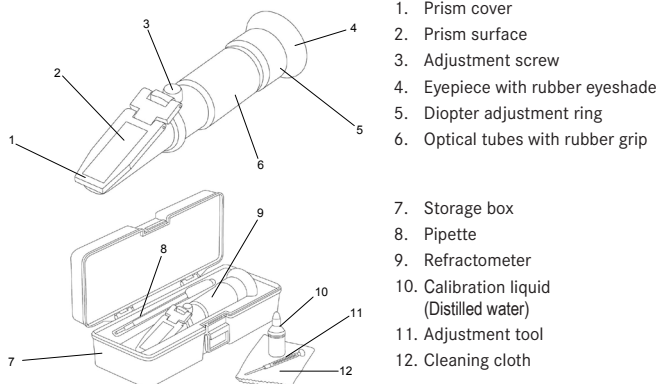
## 1. Technical data

Modell KERN	Measuring range and Scales	Scale gradu- ations Accuracy	Dimensions Product	Net weight
ORA 1SA	0-100‰ salinity 1,000-1,070 sg	1‰ salinity 0,001 sg	198x40x40mm	0,155kg
ORA 3SA	0-28% Salz (NaCl) 0-32% Brix	0,2% (NaCl) 0,2% Brix	178x40x40mm	0,145kg

Example scale on  
ORA 2 SA



## 2. Description



1. Prism cover
2. Prism surface
3. Adjustment screw
4. Eyepiece with rubber eyeshade
5. Diopter adjustment ring
6. Optical tubes with rubber grip
7. Storage box
8. Pipette
9. Refractometer
10. Calibration liquid (Distilled water)
11. Adjustment tool
12. Cleaning cloth

## 3. General information

### 3.1 Intended use

The refractometer is a measuring instrument for determining the refractive index of transparent substances in the liquid or the solid state. It is used to observe the behaviour of light as it passes from a prism with known properties to the substance being tested.

Use of the refractometer for other purposes is contrary to its intended use and may be hazardous. The manufacturer shall not be liable for any damages caused by improper use.

### 3.2 Warranty

The warranty shall be void in the event of:

- ▶ Failure to observe the instructions in the operating manual
- ▶ Use for purposes other than those described
- ▶ Modifications or opening the device housing
- ▶ Mechanical damage and/or damage resulting from media, liquids, natural wear and tear

## 4. Basic safety information

### 4.1 Follow the instructions in the operating manual



- ▶ Carefully read through the operating manual even if you have prior experience with KERN refractometers.
- ▶ Every language version includes a non-authoritative translation. The original German document is the definitive version.

### 4.2 Warning

- ▶ Do not let acids come into contact with skin or eyes. If acid comes into contact with skin, flush with copious amounts of water. Shower if larger areas of skin are affected.
- ▶ If acid comes into contact with eyes, keep the eyelid open and flush the eye with running lukewarm water from the outer corner to the inner corner. Flush eyes for at least 15 minutes. Then consult a doctor or ophthalmologist immediately.
- ▶ Thoroughly clean the refractometer after each use.
- ▶ The refractometer must not be exposed to extreme temperatures, high mechanical stresses, strong direct sunlight or high humidity.
- ▶ This refractometer is not a toy. Keep out of reach of children.
- ▶ Make sure that you will not be hit by anything else while you are using the refractometer, as this could cause serious eye injuries
- ▶ The rubber eyeshade may cause irritation when in prolonged contact with the skin. If this happens, consult your doctor.
- ▶ Do not touch the lenses with your fingers.

## 5. Supplied items

After unpacking and before using the device for the first time, check that all listed parts have been supplied. Replace damaged or faulty parts immediately and do not put them into operation.

- ▶ Refractometer
- ▶ Storage box
- ▶ Pipette
- ▶ Adjustment tool
- ▶ Cleaning cloth
- ▶ Calibration liquid (Distilled water)

## 6. Before the first use

Remove the protective film (if present) from the prism surface [2] and check that the rubber eye-cup [4] is fitted correctly.

## 7. Use/measurement

The refractometer can be used to quickly and accurately determine the refractive index of transparent substances, liquid or solid ones. To ensure correct measurement, the measuring device should be adjusted before measurements are carried out. Please make sure your hands are dry before handling the measuring device.

