

# **Clinical Refractometer**

300005

Instruction Manual

SPER  
SCIENTIFIC

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Environmental Measurement Instruments

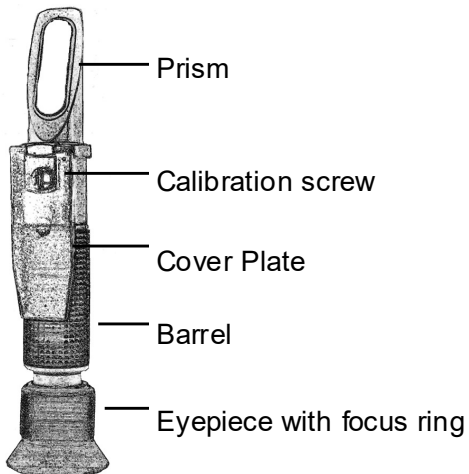
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## INTRODUCTION

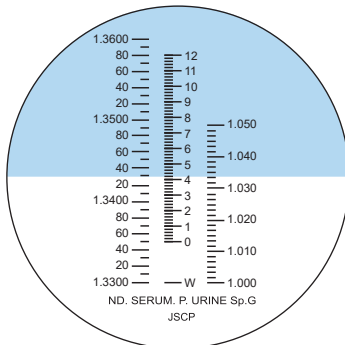
Your lightweight portable refractometer is a precision optical instrument designed to measure urine specific gravity (UG), serum albumen (SG/protein) and refractive index (Nd). It uses three accurate and graduated scales that coincide with JSCP regulations. It is excellent for medical monitoring, scientific research and quality assurance requirements. Refractometers operate on the principle that as the concentration or density of a solution increases, its refractive index changes proportionately. The refractive angle measured by your refractometer registers on the scale. The higher the concentration, the higher the readings register on the scale.

## DESCRIPTION



## OPERATING PROCEDURE

1. With the **COVER PLATE** open, clean the **PRISM** with a soft cloth to avoid scratching the surface.
2. Aim the refractometer toward a light source and rotate the **EYEPIECE** to obtain the clearest focus.
3. Zero Point Calibration:
  - A. Open the **COVER PLATE**.
  - B. Apply a few drops of the included pure distilled water onto the **PRISM** platform.
  - C. Close the **COVER PLATE**.
  - D. Turn the **CALIBRATION SCREW** until the dark and light boundary line coincides with the bottom line of the scale. (1.3330, W, and 1.000, respectively)
4. Carefully dry the prism platform and **COVER PLATE**.
5. Place a few drops of the test solution on the prism and close the **COVER PLATE** so the solution spreads evenly on the prism.
6. Aim the front of the refractometer towards the light source and focus the eyepiece on the boundary line.
7. The boundary line indicates the concentration of Urine Specific Gravity and Refractive Index of the test sample.



8. After use, clean the prism with distilled water and a cloth to remove any residue.
9. The temperature of the zero point calibration should be at the same temperature as the test solution. For variations in temperature, the zero point should be adjusted once every 30 minutes.

## PRECAUTIONS

Never submerge the unit, and do not let liquid seep into the unit's body. Clean the refractometer after each use with a soft cotton cloth. Do not scratch the surface of the prism. Store in a dry, clean, and non-corrosive environment. Avoid strong or sudden impact.

## SPECIFICATIONS

	Serum Albumen	Urine Specific Gravity	Refractive Index
Range	1 to 12 g/dL	1.000 to 1.050	1.3330 to 1.3600
Resolution	0.2 g/dL	0.002	0.0005
Accuracy	±0.2 g/dL	±0.002	±0.0005
	To ensure the highest accuracy, perform calibration and testing at about 68 to 77°F (20 to 25°C).		
Size	6 3/4" x 1 1/2" (171 x 38 mm)		
Weight	3.1 oz. (89 gr.)		
Accessories	Screwdriver, Carrying Case, Transfer Pipette, Distilled Water, Instruction Manual.		

## WARRANTY

Sper Scientific warrants this product against defects in materials and workmanship for a period of **five (5) year** from the date of purchase, and agrees to repair or replace any defective unit without charge. If your model has since been discontinued, an equivalent Sper Scientific product will be substituted if available. This warranty does not cover probes, batteries, battery leakage, or damage resulting from accident, tampering, misuse, or abuse of the product. Opening the meter to expose its electronics will break the waterproof seal and void the warranty. To obtain warranty service, ship the unit postage prepaid to:

### **SPER SCIENTIFIC LTD.**

8281 E. Evans Rd., Suite #103  
Scottsdale, AZ 85260  
(480) 948-4448

The defective unit must be accompanied by a description of the problem and your return address. Register your product online at [www.sperwarranty.com](http://www.sperwarranty.com) within 10 days of purchase.