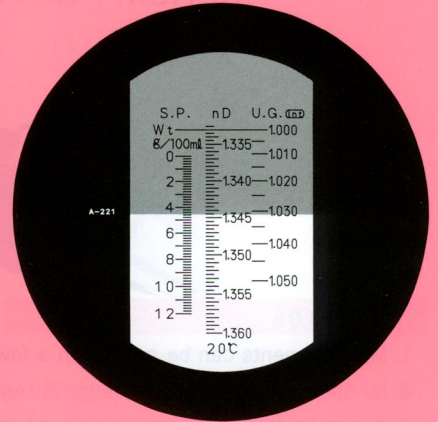
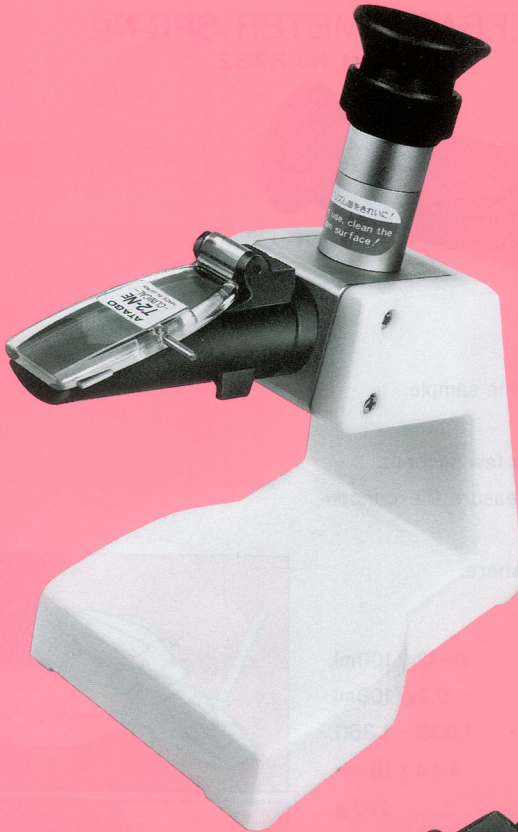


CLINICAL REFRACTOMETERS



PRINCIPLE OF THE ANALYSIS

The concentration of a solution is related to its refractive index and hence a measurement of refractive index can be used to measure concentration. The refractive index of blood serum or plasma depends mainly upon its protein concentration, as proteins are one of the major constituents.

This instrument has been designed to use the refractive index method for measuring total protein in serum. The protein scale has been prepared after extensive clinical analyses undertaken by Dr. Matsu-mura, Professor of Biochemistry at the Tokyo Women's Medical College. His scale is based on the results obtained from over 2000 cases. The scale is the most reliable one at present available.

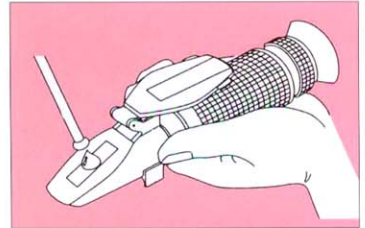
SERUM PROTEIN REFRACTOMETER **SPR-NE**

Cat. No. 2732



Features

1. Measurements can be made with a few drops of the sample.
2. No special training or knowledge is required.
3. Accurate determinations can be obtained within a few seconds.
4. The refractive index scale makes it possible to measure the concentration of other solutions.
5. Its pocket size makes it very handy to carry anywhere.



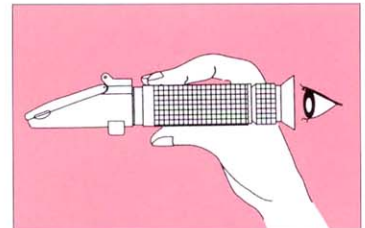
Specifications

Serum protein scale :	0—12 g /100ml.
Minimum scale of serum protein :	0.2 g /100ml.
Refractive index scale :	1.333—1.360.
Size :	4×4×18cm.
Weight :	170g.
Accessories :	Case and an adjusting screwdriver.



Instructions for use

1. Before measuring the serum protein concentration, the instrument should be checked as follows:—
Raise the daylight plate and place a few drops of distilled water on the surface of the prism. Close the daylight plate gently. Bring the scale into focus by turning the eyepiece. If the instrument is correctly adjusted at 20°C, the boundary line should coincide with the "Wt" line or 1.333 refractive index line. If it does not coincide, adjust the boundary line by turning the adjusting screw with the screwdriver provided.
2. Wipe off the distilled water with a soft tissue and place a few drops of the sample (serum) on the surface of the prism. Read the point on the serum protein scale where the boundary line falls.



EXPLANATION OF ICONS

Icons for functions, specifications and scales have been added to this catalog.



- *Clinical refractometers
- *Réfractomètres cliniques
- *Klinische Refraktometer
- *Rifrattometri uso clinico
- *Refractómetros clínicos
- *臨床用屈折計



- *Compact and easy to carry
- *Portable
- *Leicht und einfach zu tragen
- *Calibrazione con liquidi standard esclusivi
- *Compacto y fácil de llevar
- *輕巧易於攜帶

CLINICAL REFRACTOMETER T2-NE

Cat. No. 2752



Features

1. Accurate measurements can be made using a few drops of sample.
2. No special training or knowledge is required.
3. Very accurate measurements of the total protein concentration and urine specific gravity can be obtained within a few seconds without the use of a temperature correction table.
4. The refractive index scale makes it possible to measure the concentration of other solutions.
5. The specially designed optical system gives a clear and very light field of view.

Specifications

Serum protein scale :	0—12 g /100ml.
Urine specific gravity scale :	1.000—1.050.
Refractive index scale :	1.333—1.360.
Accuracy of refractive index :	±0.0002.
Size :	15×10×21cm.
Weight :	840g.

Instructions for use

1. Before measuring the serum protein or urine specific gravity, the instrument should be checked as follows:—
Raise the daylight plate and place a few drops of distilled water on the surface of the prism. Close the daylight plate gently. Look through the eyepiece and bring the scale into focus by turning the eyepiece. If the scale is correct, the boundary line should fall on the zero or 1.333 refractive index line. If it does not, adjust the boundary line so as to make it coincide with the "W" line by turning the scale adjusting screw.
2. Wipe off the distilled water with a soft tissue. Place a few drops of the sample on the prism as before.
 - Read the S. P. scale to give the total protein concentration of the sample of serum.
 - Read the U. G. scale to read the specific gravity of the urine sample.
 - Read the ND. scale for the refractive index of any other solutions.
3. Wipe off the sample with a soft tissue after the measurement has been made. It is important to ensure that the surface of the prism should not be scratched in cleaning.

Nomal values

Serum protein concentration 6.5—8.7 g /100ml.

Specific gravity of urine 1.015—1.025 (24 hours urine).

Specific gravity of urine fluctuates between 1.008 and 1.035 in a day.

EXPLANATION OF ICONS

Icons for functions, specifications and scales have been added to this catalog.



- *Calibration with water
- *Calibration 1 point* sur eau distillée
- *Kalibrierung mit Wasser
- *Calibrazione con acqua
- *Calibración con agua
- *用水歸零

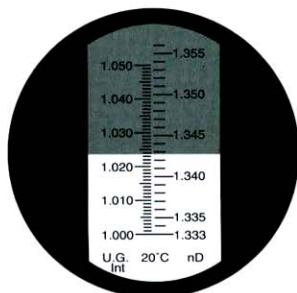


- *Refractive index scale
- *Indice de réfraction
- *Skala fuer Refraktive Index
- *Indice di rifrazione
- *Escala de índice de refracción
- *折射率刻度

ATAGO URINE SPECIFIC GRAVITY REFRACTOMETER

URICON-NE

Cat. No.2722 URC-NE



Features

- * Specific gravity can be determined with only one or two drops of urine.
- * The instrument is compact and light
- * It is very simple to use, and very easy carry.
- * It is made from materials which have a high chemical resistance to urine.
- * It can also be used to measure the refractive index of other solutions.

Specification

Urine specific gravity scale: 1.000—1.050 Dimensions: 4 x 4 x 21 cm.
 Refractive index scale: 1.333—1.356 Weight: 200 g.

TABLE: Refractive index of aqueous solutions.

The refractive index tables on the right hand side given as examples. We recommend users to make their own tables according to their particular requirements or to use the tables given in reference books.

Solution	Concentration of solution (%)				Solution	Concentration of solution (%)			
	1	4	10	20		1	4	10	20
H ₂ SO ₄	1.3343	1.3378	1.3444	1.3549	KBr	1.3342	1.3377	1.3446	1.3556
HNO ₃	1.3343	1.3379	1.3451	1.3571	KI	1.3343	1.3382	1.3459	1.3585
H ₃ PO ₄	1.3340	1.3367	1.3418	1.3501	KNO ₃	1.3339	1.3367	1.3419	1.3500
NaCl	1.3348	1.3398	1.3494	1.3642	CuSO ₄	1.3348	1.3402	1.3503	1.3661
NaBr	1.3344	1.3385	1.3465	1.3593	ZnSO ₄	—	1.3399	1.3496	1.3645
NaI	1.3344	1.3387	1.3473	1.3615	MgSO ₄	1.3350	1.3408	1.3514	1.3671
NaNO ₃	1.3341	1.3374	1.3437	1.3532	CaCl	1.3354	1.3423	1.3557	—
KCl	1.3344	1.3382	1.3457	1.3575	BaCl ₂ ·2H ₂ O	1.3343	1.3380	1.3453	1.3571

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