



Manual

Elma RT01 Refractometer

EAN: 5706445840212



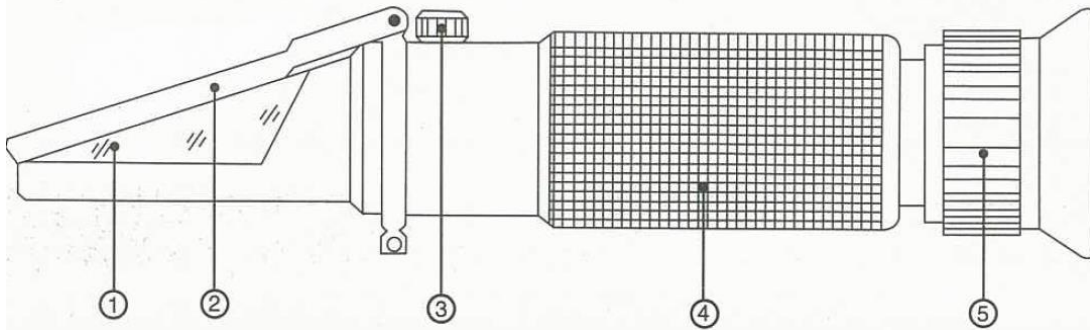
Hand Refractometer Instructions Operating

Series

No	Model	Measuring Range	Minimum Scale	SIZE (mm)	Weight
1	REF401/411/401 bp	E 32 ~ -60 °F P 32 ~ -50 °F B1.15 ~ 1.30kg/L	-10 °F -10 °F 0.01 kg/L	26/30 x 40 x 160	180
2	REF401k/411k	E 32 ~ -60 °F (0~59%) P 32 ~ -50 °F (0~63%) B1.15 ~ 1.30kg/L	-5 °F -5 °F 0.01 kg/L	26/30 x 40 x 160	180
3	REF401A/411A	E 32 ~ -84 °F P 32 ~ -60 °F B1.100 ~ 1.400kg/L	-5 °F -5 °F 0.01 kg/L	26/30 x 40 x 160	180
4	REF402/412/402 bp	E/P ~ -50 °C B1.15 ~ 1.30kg/L	-5 °C 0.01 kg/L	26/30 x 40 x 160	180
5	REF402A/412A	E 0 ~ -60 °C P 0 ~ -50 °C B1.15 ~ 1.30kg/L	-5 °C -5 °C 0.01 kg/L	26/30 x 40 x 160	180
6	REF402k/412k	E 0 ~ -50 °C (0~58.4%) P 0 ~ -50 °C (0~62.4%) B1.15 ~ 1.30kg/L	-5 °C -5 °C 0.01 kg/L	26/30 x 40 x 160	180
7	REF403A/413A	E/P 0 ~ -50 °C C 0 ~ -50 °C B1.10 ~ 1.40kg/L	-5 °C -5 °C 0.01 kg/L	26/30 x 40 x 160	180
8	REF404/414/404 bp	E/P 0 ~ -50 °C C 0 ~ -40 °C B1.100 ~ 1.400kg/L	-10 °C -5 °C 0.01 kg/L	26/30 x 40 x 160	180
9	REF404U	EP 0 ~ -50 °C C 0 ~ -40 °C B1.100 ~ 1.400kg/L ADBLUE% 30 ~35	-10 °C -5 °C 0.01 kg/L ADBLUE% 0.5	26/30 x 40 x 160	180
10	REF408/418	E/P/C 0 ~ -50 °C E/P/C 32 ~ -60 °C B 1.15 ~ 1.30kg/L	-5 °C -10 °C 0.01 kg/L	26/30 x 40 x 160	180
11	REF408A/418A	E/P ~ -50 °C E/P 32 ~ -60 °C B1.10 ~ 1.40kg/L	-5 °C -10 °C 0.01 kg/L	26/30 x 40 x 160	180
12	REF409/419	Nd 1.33 ~ 1.40 P - 2 ~ -43 °C P 28 ~ -45 °C	0.01 Nd	26/30 x 40 x 160	180

- Note: 1. Each of the models in Series catalog with footnote "**bp**" has a prism base made of black engineering plastics.
2. "Weight" listed here refers to the weight of plain type refractometer.

Name of components _____



1. Prism 2. Cover plate 3. Correcting screw 4. Mirror tube 5. Eyepiece (Adjusting ring of dioptre)

USE _____

Portable Refractometer model REF 401- 409 are a precision optical instrument especially for measuring the ice point of engine coolant and the operation state of battery charging liquid. It is suitable for transportation vehicles, such as car, tractor, tank, ship etc, which use ethylene glycol as coolant, Sulphuric acid as charging liquid. It is characterized by small volume, light weight and easy to operate, therefore it can be used from all sides.

METHOD OF OPERATION _____

1. Aim the front end of the refractometer to the direction of bright and adjust the adjusting ring of dioptre **Eyepiece 5** until the reticle can be seen clearly.

2. Adjustment of null

Open the **Cover plate 2**, drop one or two drops of pure distilled water on the surface of the prism. Close the **Cover plate 2** and press it lightly, then adjust the **Correct screw 3** to make the light/dark boundary coincide with the water line.

3. Open the **Cover plate 2** and wipe the water off the surfaces of the prism and cover plate with the supplied Cleaning cloth, then drop one or two drops of the liquid needed to test on the prism surface, close the **Cover plate 2** and press it lightly. The corresponding dial reading on the light/dark boundary is the ice point of the liquid, or the indication of the operation state of battery liquid.
4. After measuring, wipe the liquid off the prism surface with the supplied Cleaning cloth, after drying, please keep appropriately in store.

ATTENTIONS AND MAINTENANCE _____

1. Adjusting the null liquid and specimen should be under the same temperature, if the temperature varied greatly, the null point should be adjusted once per 30 minutes.
2. The prism must be cleaned completely. Because any residual impurity on it could cause error during measuring.
3. Because the battery liquid contains sulphuric acid, it must be dipped in by glass rod instead of your hand to avoid hurt of you.
4. After usage, don't use water to wash the instrument, avoid water entering the pipe of the instrument.
5. As it is a kind of precision optical instrument, you should hand it gently and take good care of it. Don't touch and scratch the optical surfaces. It should be kept in the environment of dry, clean and non-corrosiveness air, to prevent the surface if it is turning mouldy and foggy. Please avoid strong shock during transportation.
6. If the consumers use the instrument in accordance with the mentioned of usage, it is guarantee that the instrument can't break down. The optical performance can't change.

TEMPERATURE COMPENSATION

REF411~419 Model has a built-in automatic temperature compensation system.

Compensation temperature range 10 °C to 30 °C

ACCESSORY

Cleaning cloth	1
Suction tube	1
Screw driver	1



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