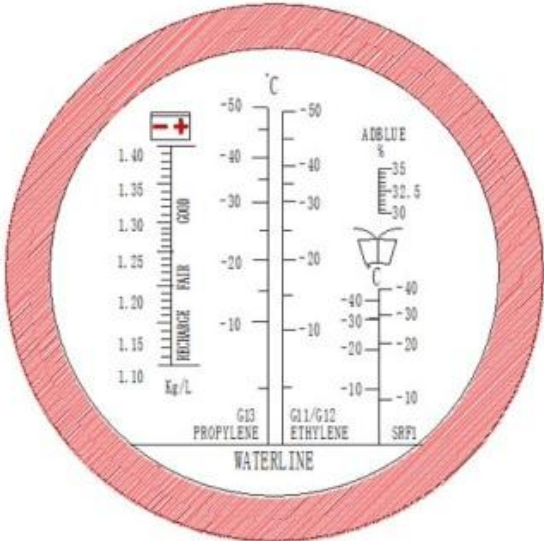


# Hand Refractometer for Battery/Antifreeze/Cleaning/ AdBlue® Fluid (VRA) Model HU13002



Read User's Instructions carefully before installing, operating, serving or repairing this tool. Keep these instructions in a safe accessible place.

# INTRODUCTION

Congratulations on the purchase of your Battery/Coolant Refractometer. This precision optical instrument should be handled gently; avoid touching the optical surface. Careful use of this instrument will provide years of reliable service.

# APPLICATION AND SPECIFICATIONS

It is designed for measuring the concentration of the battery fluids, the freezing point of antifreeze liquid and windshield cleaning fluid. With the indication of the percentage you may know at which temperature the fluid will be frozen for both propylene glycol and ethylene glycol. It can also be used for checking the strength of the battery electrolyte solution and Urea Concentration in AdBlue.

- Range :

-10°C ~ -50°C for Propylene glycol (G13) and Ethylene glycol (G11/G12) freeze point

-10°C ~ -40°C for Windscreen Cleaner SRF1

1,10-1,40 kg/l for specific gravity of battery acid

30%-35% for Adblue(VRA)

- Resolution :

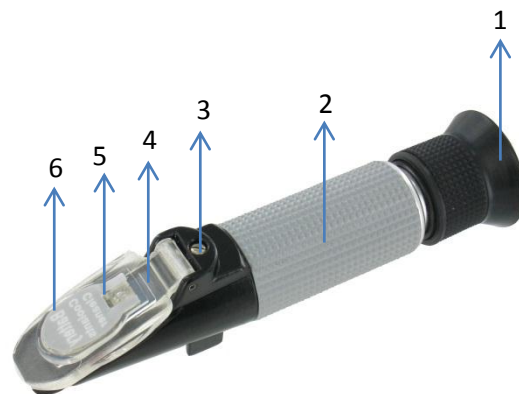
5°C glycol freeze point

0.01 specific gravity of battery acid

±0.1% for Adblue(VRA)

- Dimensions : 160x40x30mm

- Weight : 200g



# DESCRIPTION

1. Eyepiece

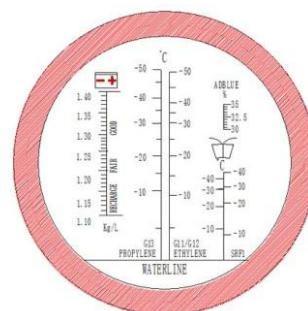
2. Mirror tube

3. Adjustment Screw

4. Cover plate

5. Switch

6. Prism



*Field of View*

# OPERATION

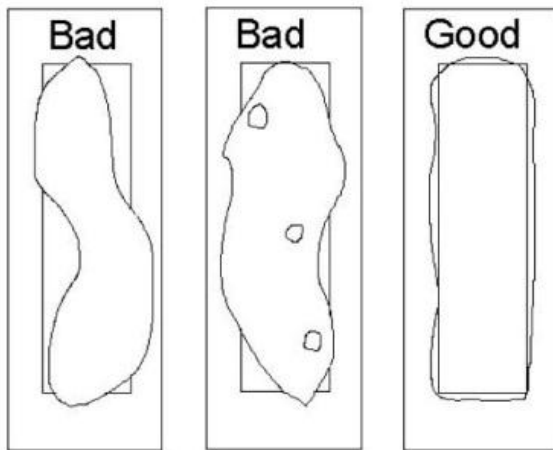
The instrument measures the refractive index of the sample.

## 1. Zero Adjustment

Place one or two drops of distilled water on the prism. Close the cover plate and rotate the adjusting screw so that the light/dark boundary lines up with the “waterline”. Once the zero adjustment has been completed, clean the prism with soft cloth.

## 2. Sample Preparation and Reading

To take a sample reading, simply place a few drops of a sample liquid on the measurement prism at the end of the instrument. Lower the cover plate onto the sample and prism. Close the cover so the liquid spreads across the entire surface of the prism without air bubbles or dry spots. Allow the sample to remain on the prism for approximately 30 seconds.



Turn on the switch of the instrument by pushing it to the front, look through the eyepiece. The freezing point of the liquid or the state of the battery liquid is determined by the intersection of the boundary of the light and dark fields (known as the shadowline) on the displayed scale. If the scale appears out of focus, the eyepiece may be adjusted by rotating the knurled portion.





The instrument also features an eye guard to prevent stray light from entering the eyepiece and causing reflections. Once a reading has been taken, wipe dry with a clean cloth (do not wash or rinse) and place the instrument in the supplied plastic case. Store the instrument in a safe, dry environment.

**NOTE:** *It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.*

**IMPORTANT:** *No liability is accepted for incorrect use of this product.*

**WARRANTY:** *Guarantee is 12 months from purchase date, proof of which will be required for any claim.*