REED

Model R9700

Anti-freeze & Battery Fluid Refractometer



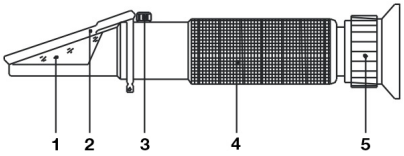
Instruction Manual

www.reedinstruments.com

Specifications

Measuring Range:	-50 to 0°C propylene and ethylene glycol 1.15 - 1.30 specific gravity
Minimum Scale Division:	5°C
Dimensions:	30 x 40 x 170mm (1 x 1.5 x 6.5”)
Automatic Temperature Compensation Range:	10 to 30°C
Weight:	200g (7 oz)

Instrument Description



1. Prism
2. Cover Plate
3. Correcting Screw
4. Mirror Tube
5. Eyepiece (Adjusting ring of diopter)

Operating Instructions

1. Use dropper to obtain coolant sample, open the cover plate and place 2-3 drops of the sample onto the prism surface, close the cover plate, press lightly and ensure the water spreads evenly across the whole surface area without air bubbles or dry sections. Wait 30 seconds until the liquid sample adjusts to ambient temperature.
2. Hold towards light source and look into the eyepiece to view the scale, the coolant readings are located on the far left and right and the battery fluid reading is in the centre.
3. The test reading is taken from where the boundary line between the upper blue field and the lower white field crosses the graduated scale. This reading is the actual freezing point/concentration level of the coolant or the charge state of the battery fluid.
4. Wipe the prism clean and dry with damp soft cloth and store in the supplied case.

Calibration

1. Open the cover plate and place 2-3 drops of distilled water onto the prism surface, close the cover plate, press lightly and ensure the water spreads evenly across the whole surface area without air bubbles or dry sections. (wait 30 seconds until the water adjusts to ambient temperature)
2. Hold towards light source and look into the eyepiece, if the boundary line between the upper blue field and the lower white field is not located exactly on the 0°C waterline, adjust the correcting screw until both lines meet.
3. Wipe the water from the prism with clean dry cloth and replace the rubber correcting screw cover.

NOTE: under normal operating conditions the calibration only needs to be checked periodically.

Maintenance

1. If the ambient temperature is not within the automatic temperature compensation range (10 - 30°C) the instrument must be calibrated before testing commences.
2. The prism must be cleaned thoroughly with a soft, clean damp cloth after each use - failure to do so will result in inaccurate readings and possible long term
damage.
3. The instrument must be kept in a dry clean environment to prevent condensation forming on the optical components.
4. Use a glass rod to sample battery fluid as acid will damage the dropper and also harm your skin–separate readings must be taken from each cell
5. If used in accordance with the instructions and all warning are followed - the optical performance will remain constant and the instrument will give many years of reliable service.

Warning

1. DO NOT IMMERSE IN OR CLEAN WITH RUNNING WATER
2. THIS TOOL IS A PRECISON OPTICAL INSTRUMENT, IT REQUIRES CAREFULL HANDLING and STORAGE
3. DO NOT DROP OR SUBJECT TO SHOCK AS DAMAGE MAY RESULT TO THE MIRROR TUBE and OPTICAL COMPONENTS
4. DO NOT SCRATCH OR ATTEMPT TO MEASURE CORROSIVE CHEMICALS AS DAMAGE MAY OCCUR TO THE PRISM'S COATING

CAUTION – use extreme care when opening the radiator cap – do not remove while engine is running or the engine is warm. Do not let battery fluid come in contact with skin or eyes – personal injury may result

IT IS RECOMMENED TO WEAR, SAFETY GLASSES AND GLOVES WHENEVER OBTAINING SAMPLES OF ENGINE COOLANT OR BATTERY FLUID