

Checking Critical Fluids

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Many times owners wonder “How do I tell if my coolant or DEF is still good?” An easy way to check the quality of Coolant, DEF and Battery Acid is to use what’s called a Refractometer. This device measures the specific gravity or concentration of substances in water. It’s a simple device that basically measures the refraction of a liquid controlled by the type of substance in it. When light enters a liquid it changes direction; this is called refraction. **Refractometers** measure the degree to which the light changes direction, called the angle of refraction. A **refractometer** takes the refraction angles and correlates them to refractive index (nD) values that have been established.

In practice, all you have to do is take a couple of drops of Coolant, DEF or Battery acid and place them on the glass. Close the cover, which spreads the liquid into a thin film, then hold it up to bright daylight and look into the eyepiece. Make sure there are no bubbles or gaps in the coverage. The separation line between the blue and white area in the scale shows the coolant protection level, battery specific gravity or the DEF Urea concentration. Some refractometers only check one or the other, or you can find models that have scales for all three liquids.



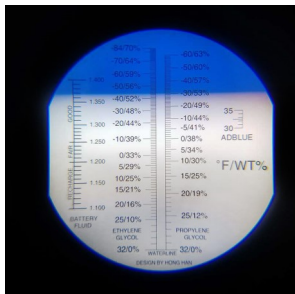
Refractometer with cover open.



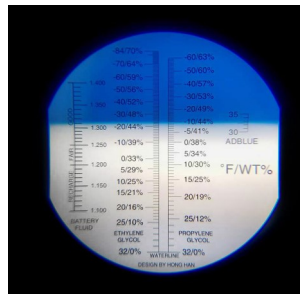
Place a drop or two of fluid on the screen



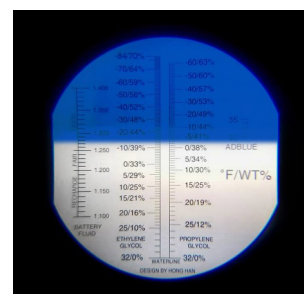
Close the cover spreading the fluid out evenly with no bubbles



Coolant Reading
-44°f protection



DEF Concentration
32.5% Urea



Battery State of Charge
1.27 Specific Gravity