

Tools for Troubleshooting

You are looking at a digital AC DC clamp on volt and amp meter along with a hydrometer. Do not attempt to diagnose an electrical issue on your Duffy without these tools.

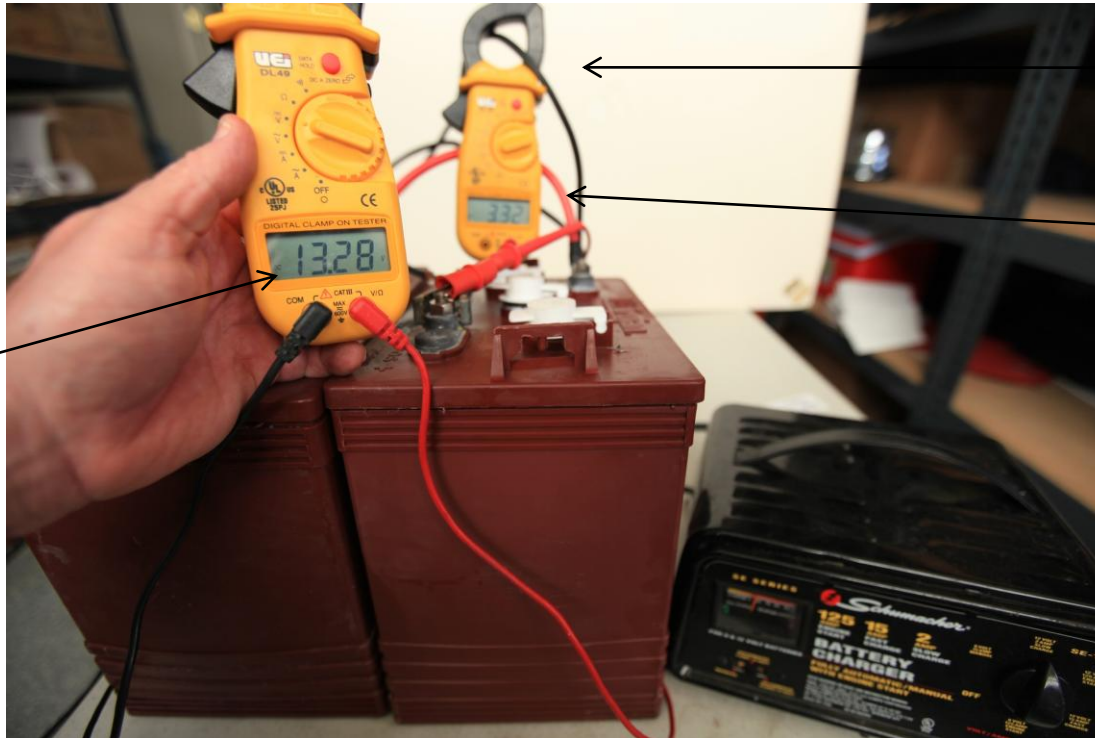


The hydrometer measures the gravity of the liquid in the battery. Easy to use and gives an accurate charge indication.

The digital AC / DC clamp on volt and amp meter can tell you how much power (in amps) is coming in or out. Displays DC volts too. Also, very helpful in continuity mode for finding bad connections.

Volts and Amps

Here is the battery voltage under charge 13.28v and climbing. The finished charge voltage is 2.5 volts per cell. In this example we have two six volt batteries wired together in series. There are six cells each one must get to 2.5 volts for a full charge. Therefore, 2.5 times 6 equals 15 volts.



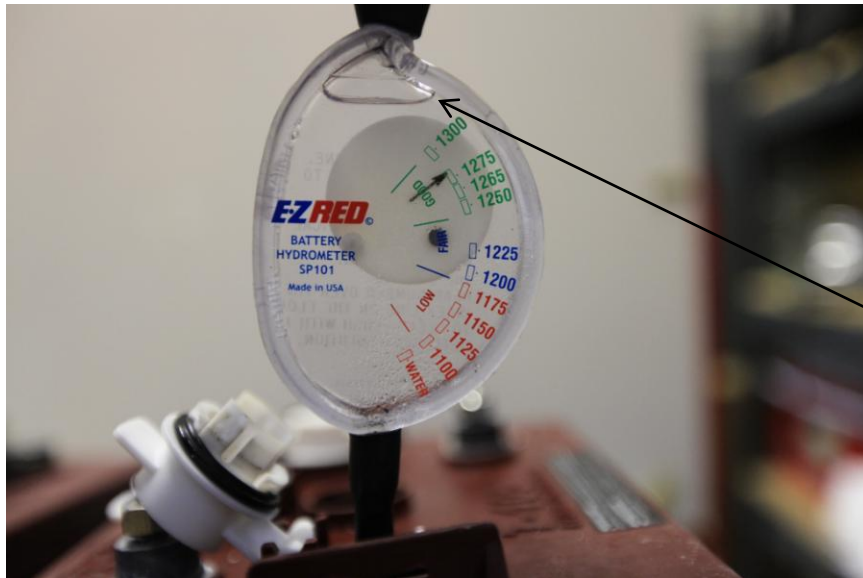
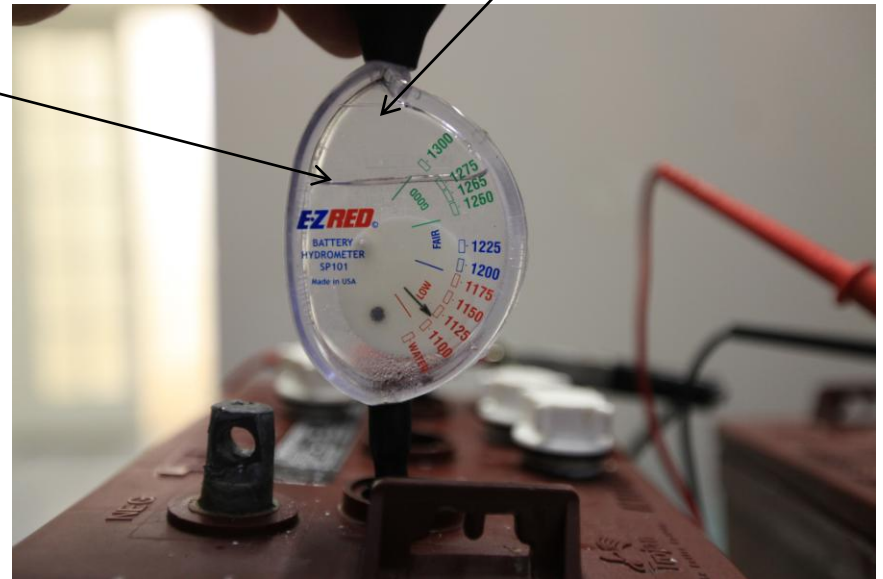
We have clamped over the wire and are now reading DC amps. The rate of charge in amps is 3.32. When batteries are low in charge the charger puts out a higher amount of amps. As the battery voltage increases the amperage goes down to below 1 amp when fully charged. You should see at least 15 amps going into the batteries when they are low in charge.

This type of meter will show you both volts and amps. This is important in locating and fixing any electrical problems that may occur. The meter is easy to understand and use.

How to use the Hydrometer

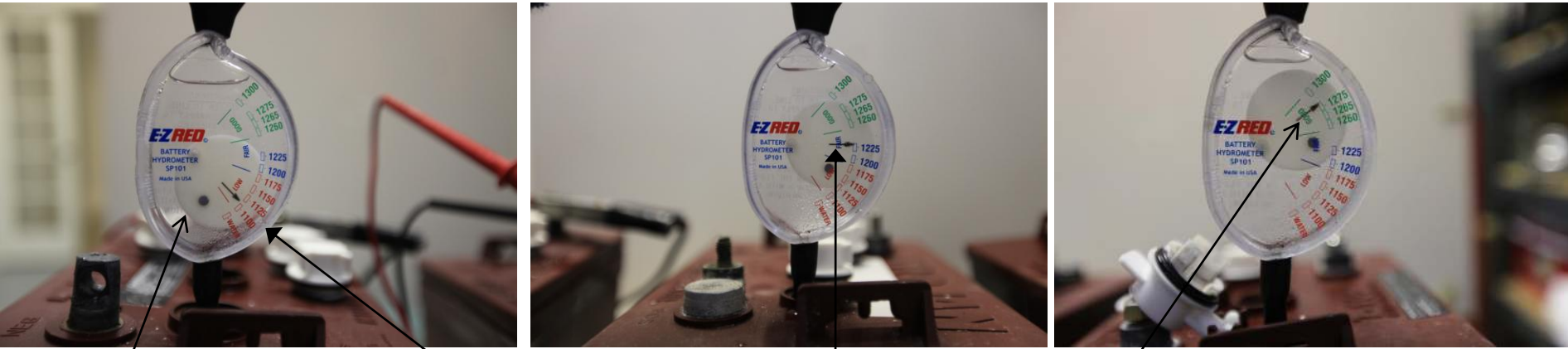
Make sure to fill to line. In this example, not enough material has been drawn into the chamber for an accurate reading. VERY IMPORTANT !

Depress bulb and draw up the battery fluid to this line.



This is the proper level. Remember to shake the hydrometer a little to get any air bubbles out.

Use Hydrometer for Battery Charge Level, NOT a Volt Meter!



Use a hydrometer to get an accurate indication of how much charge is in the battery



Big difference in gravity level of 175 points. Easy to find dead battery with a hydrometer over a volt meter.

Only a .46 difference in VOLTS from empty to full !!