Recharge/Recovery Procedure for Hawker & Optima Sealed AGM batteries

Batteries may emit explosive hydrogen gas.
Always follow your shop safety procedures when working with batteries.
Wear appropriate protective gear (safety glasses, face shield, etc)

Physical inspection: **Any batteries with damage should be disposed of immediately.**

(a) Check top, sides, and bottom for cracks, holes, or dents in the plastic.

(b) Examine seal between lid and case to make sure there are no breaches

(c) Make sure terminals are not melted, bent, or otherwise damaged.

Charging: **Clamps, wiring and alligator jaws must be clean and have minimal corrosion.**

Use a constant voltage charger that regulates the voltage between 14.4 and 15.0 volts DC. It should have a minimum of 10 amps current output.

NOTE: *Some automotive chargers will not properly limit voltage for sealed batteries. These chargers often have "Low, Medium, High" settings for the charge rate. Use the "Low" setting with a sealed battery and check the battery frequently for signs of overheating. The battery may get warm which is OK, but it should not be hot to the touch which can be an indication that the battery is being overcharged or may have an internal problem. A strong sulfur smell may also be an indication of overcharge. If the charger has a 120 minute timer you will need to reset the timer several times on batteries that start below 12.0 volts. See step "(d)" below.*

(a) When first turning on the charger, ALWAYS watch the ammeter for the first few minutes to verify that the battery is accepting amperage.

NOTE: *If the battery is very deeply discharged (i.e. below 8 volts) some battery chargers will not initiate charging. Lights on the charger may come on, but no amperage flows to the battery. Always watch the ammeter to verify that current is flowing to the battery.*

(b) The battery is finished charging when charge amps drops to about 1 amp and holds there for 3 hours.

(c) If the charger has shut off automatically or you want to verify if the battery is fully charged, perform the following steps:

1. Turn charger power off for approximately 5 – 10 seconds.
2. While watching the ammeter turn the charger back on.
3. The amperage should bounce up, and then immediately start dropping back towards 0.
4. If amperage tapers all the way down to about 1 amp or less the battery is fully charged. If Amperage hangs above 1 amp the battery needs more charge time.

VOLTAGE CHECK: **After charging allow battery to settle ("rest") for a minimum of 8 hours.**

To ensure that the battery was fully charged, it should have the following settled ("rested") Open Circuit Voltage:

- ►Hawker Armasafe ≥: 12.85 volts
- ►Optima Red Top ≥: 12.80 volts
- ►Optima Yellow Top ≥: 12.85 volts
- ►6TMF & 2HN ≥: 12.65 volts

Military Battery Systems, Inc. 970-586-0660 www.milbatteries.com

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TESTING: The battery should be load tested for a duration of 15 seconds at a rate of ½ of its Cold Cranking Amps (CCA) rating.

For common military batteries use the following test values:

- ►Hawker Armasafe: 600 amps,
- ►Optima Red Top: 400 amps,
- ►6TMF: 300 amps,
- ►Optima Yellow Top (group 34): 350 amps,
- ►Optima Yellow Top (group 31): 450 amps,
- ►2HN: 75 amps

(a) During the 15 second load test a good battery will hold the voltage to ≥ 10.0 VDC. If the voltage during the test drops slightly below 10.0 VDC, the operator may at their discretion recharge the battery and attempt a 2nd test.

(b) If the battery passes the load test it is ready to reissue for immediate vehicle use.

NOTE: *If after testing the battery is going into equipment destined for long term storage such as with Pre-Positioned stock or WRM, it should be given a top-off charge before being issued. A charge of about 2 hours should be sufficient.*

---------- ***NOTE*** ----------

If an appropriate load tester is not available, an alternative test may be used such as the common military 490 conductance tester. This is a calculated CCA test and should not be considered a true CCA value. It is also subject to greater variation in determining battery state of health. If using this type of test, the Calculated CCA value for a good battery should be a minimum of:

- ►Hawker Armasafe: 1,400 amps
- ►Optima Red Top: 900 amps,
- ►Optima Yellow or Blue Top (group 34): 850 amps,
- ►Optima Yellow Top (group 31): 1,000 amps
- ►6TMF: 700 amps
- ►2HN: 150 amps

Conductance testing is not endorsed by most battery manufacturers. It is listed here for convenience since these testers are commonly used by the military.

If battery fails the testing procedures described above it should be disposed of per your organizational procedures.

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