



# Service Letter

Ariens Company  
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**Product Family: Zoom XL and ZT XL Zero-Turn Mowers**

**Subject: 12-Volt Sealed AGM Batteries**

**Dealer Action: Parts Information**

Model	Description
915111	Zoom XL 1842
915113	Zoom XL 2448
915137	Zoom XL 2042
915139	Zoom XL 2548
915321	Zoom XL 1842 CE

Model	Description
915110	ZT XL 2042
915112	ZT XL 2548
915114	ZT XL 2554
915118	ZT XL 1842
915134	ZT XL 2042

Model	Description
915136	ZT XL 2548
915138	ZT XL 2554
991060 SN < 1000	PM148I
991061 SN < 1000	PM152I
991067 SN < 1000	PM160I

Ariens Company has learned that the 12-volt sealed absorption glass mat (AGM) batteries (p/n 02970100) used on the models listed above may not be getting properly charged before use, which can prevent the battery from starting a unit and can decrease battery life.

Absorption glass mat batteries such as p/n 02970100 cannot reach full charge on the charging system of a lawn mower, and they lose 0.07 – 0.10 V charge per month while in storage. These batteries should be fully charged on a battery charger before use according to the battery manufacturer’s recommended charging procedure attached to this letter.

Dealers should also establish a monthly battery inspection and charging schedule for units in inventory to ensure customers receive fully charged batteries that, barring damage or customer neglect, will provide proper service for the life of the battery. In addition, dealers should follow these standard procedures when storing batteries for service or on equipment in inventory:

- Do not store the battery for more than 90 days without charging.
- Do not store a discharged battery in subzero conditions.
- Only use fully automatic/float chargers for charging AGM batteries.
- Never jump start a dead battery from an automotive vehicle.

The battery manufacturer recommends a 12V 750mah Deltran Battery Tender Jr., part number DBT021-0123, available through Ariens as p/n 00070200.

## Battery Charging and Maintenance Procedures (Feb09)

Factory activated AGM (absorption glass mat) batteries will lose charge during storage. OCV (open circuit voltage) is a good indicator of the battery state of charge. A fully charged AGM battery has an OCV (measured 24 hours after last charging) of 12.8V or higher. The OCV typically drops 0.07-0.10 V per month depending on storage temperature. Allowing AGM batteries with OCV of 12.5V or lower to stand for months or longer will cause increasing capacity deterioration that cannot be recovered with recharge and eventually will lead to battery failure. AGM Batteries must be maintained according to the following recommended procedures to avoid low battery performance and premature failure.

### 1. OCV (open circuit voltage) Check

- a) Check OCV on products as received and record OCV/check date on the products with removable tags/stickers. Use a fluke or other digital voltmeters for checking the OCV. The OCV typically drops 0.07-0.10 V per month depending on storage temperature. The higher the temperature, the higher the voltage drops. The rate of battery charge loss at 88 degrees F is double that at 70 degrees F.
- b) Fully recharge products according the following schedule:

<u>OCV</u>	<u>Charge Schedule</u>
12.50V or lower*	Charge immediately (see procedure below)
12.51-12.70V	Schedule recharge within 30 days
12.71V or higher	Check OCV monthly

\* Batteries with OCV of 12.20V or lower are defective and must be replaced.

- c) Check OCV on batteries in storage monthly. Schedule recharge based on OCV according to the table in (b) above. Batteries with OCV of 12.20V or lower are defective and must be replaced.

### 2. Maintenance Charging Procedures

#### (a) Recommended Charger for 12V Batteries

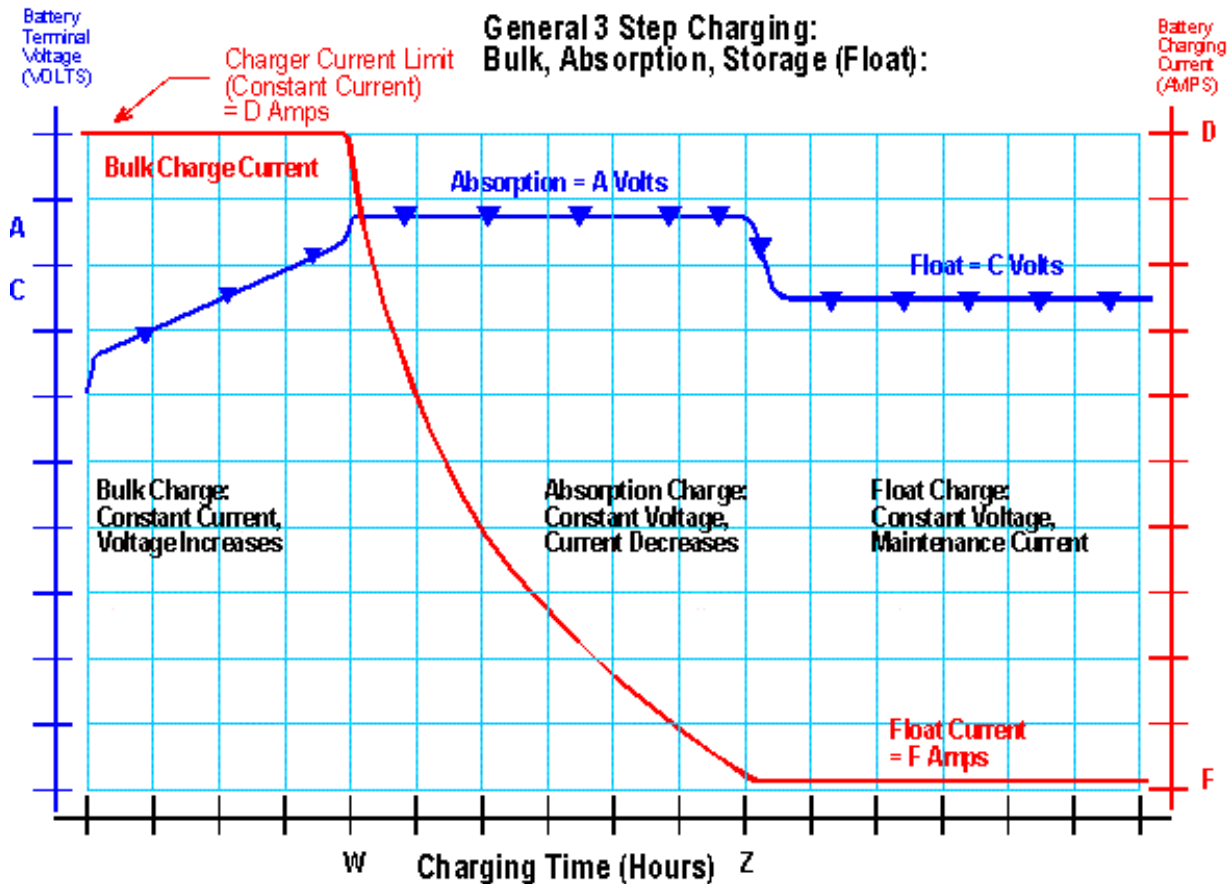
- 12V 750mah Deltran Battery Tender Jr., part number DBT021-0123, available through Ariens as p/n 00070200
- Deltran 10 Bank Battery Tender (capable of charging 1 to 10 batteries independently)
- Equivalent single or multiple bank chargers featuring 14.7V constant voltage with 0.3C (C=battery 10 Hour AH capacity) current limiting capability

#### (b) Deltran 10 Bank Battery Tender Charging Instructions

- **Follow the charger manufacturer's recommended safety and charging procedures**

(c) Equivalent Charger Charging Instructions:

The preferred charging method recommended by most AGM battery manufacturers is constant voltage with current limiting. A typical charging profile using such charging method is shown below:



The recommended charging voltage “A” is 14.7 Volts (for 12V batteries). The constant current limit “D” is 0.3 times the 10 Hour AH capacity rating. The Float voltage “C” is 13.7 Volts. During the Absorption Phase of charging, the voltage remains constant at “A”, the current dropped from “D” to approximately 120 mA, the battery charge increased from approximately 80% to 90% or higher. An additional Float Charge at “C” Float voltage for 2 hours or longer will bring the battery to full charge.

Chargers with the above charging profiles can be used to charge AGM batteries. **Follow the charger manufacturer’s safety and charging instructions.** Make sure that the maximum charging current is 0.3C or lower. The total charging time should be limited to 24 hours for safety reason (in case of defective battery). **After 24 hours of charging, if the charging current does not taper down to 0.05C, it may indicate that the battery is defective. Stop the charging immediately and replace the battery.**