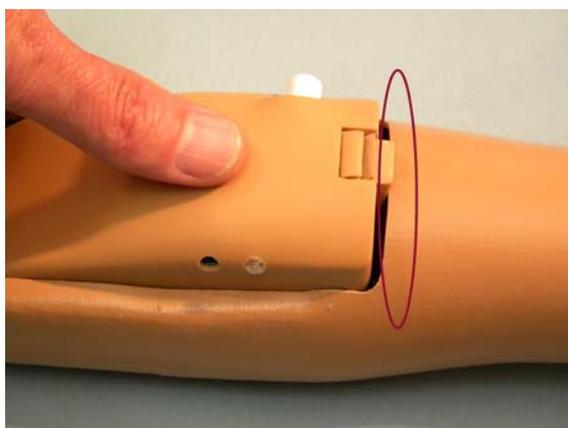


## Boston Digital Arm Lithium-polymer Battery Upgrade

Liberating Technologies, Inc introduced a new battery for the Boston Digital Arm in 2010. Prostheses delivered in 2010 were supplied with this upgraded Lithium-polymer battery (BE360). The performance of the new battery is superior to the old Ni-CAD Batteries (BE350). The Lithium battery provides 11 volts (nominal) with 2000 mAHr capacity (about twice that of the old battery), and is lighter than the original Ni-CAD battery. When used with the optional Regulator Board (BE361), the battery also delivers 7.4 volts (regulated) to the terminal device.

The new Lithium-polymer Battery can be retrofit to an older Boston Digital Arm (those delivered between 2001 and 2009). This allows previous Boston Arm wearers to upgrade to the new battery chemistry and benefit from its superior performance.

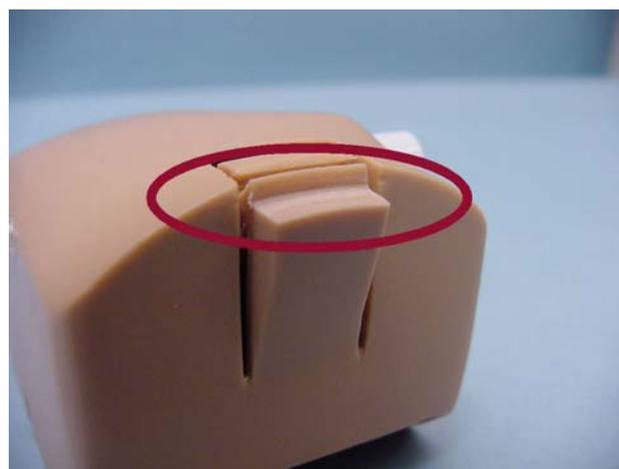
The battery cavity in the old laminated Boston Arm forearms is similar to the cavity in the new molded urethane forearms, but not identical - two adjustments are required; 1) battery opening in forearm and 2) battery latch height. We suggest sending the prosthesis back to LTI for this battery refit; however it can be done by the local clinician.



New Battery in older forearm

The new Boston Arm Battery must drop into the battery cavity and lock in with the latch located on the distal end of the battery. To do this, the distal edge of the battery cavity in the forearm must be modified. Generally this must be opened up by  $\frac{1}{8}$ - $\frac{1}{4}$ " (3-6 mm). However, it must not be cut back too far or the battery latch will not engage properly. Cut this opening back incrementally to ensure that the battery locks into place and creates a good fit at the battery-to-forearm interface.

The other modification required is to file the top of the latch on the battery case to the correct height and arch shape to engage the forearm. The latch is intentionally molded high to provide for adjustment to accommodate the laminated forearms. Generally the latch needs to be filed down  $\frac{1}{16}$ - $\frac{1}{8}$ " (1-3 mm) and the shape must conform to that of the curved forearm. Too little adjustment will make it difficult to latch the battery and will apply excessive force on the circuit board. Too much adjustment will result in a loose battery. This modification should be done incrementally to assure that the battery locks into place properly.



Battery latch height adjustment

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## UPGRADING:

When upgrading to a new lithium-polymer battery, the clinician must establish the configuration of the Boston Digital Arm. There are essentially two configurations; 1) a traditional (single motor) terminal device (i.e. Bock DMC, Sensor-speed, etc.) or 2) a multi-articulating (multiple motors) terminal device (i.e. bebionic or iLimb hand).

If replacing the Ni-CAD battery in a prosthesis with a conventional terminal device - order;

- **BE360 Lithium-polymer Battery, 2000 mAHr, 11 volts**
- **BE366 Battery Charger for Li-poly battery**

note: old Ni-CAD battery chargers (BE355) are not suitable for the new Lithium batteries.

If replacing the Ni-CAD battery in a prosthesis with a multi-articulating terminal device or considering using a multi-articulating hand - order;

- **BE360 Lithium-polymer Battery, 2000 mAHr, 11 volts**
- **BE361 Regulator Board, 7.4 volts**
- **BE346 Cable, Output for multi-articulating hands**
- **BE366 Battery Charger for Li-poly battery**

The BE346 Cable will replace the BE 343 Cable on the distal end of the Boston Arm's main circuit board. The power connector shown to the right will plug into the 7.4 volt regulated output connector on the bottom of the new battery.

