

MCH-100-A Battery Powered heat Gun

BB-390B/U BATTERY PROCEDURES

Preparation of Batteries prior to use.

(It is supposed that service technicians using these tools often open the package, put the batteries into the pack and turn it on. How many read the manual cover to cover? It is critical to follow these procedures in order to prolong the life of the batteries and to avoid any problems.)

- 1) The heat Gun subjects the BB-390 batteries to a rapid discharge and the batteries must be 100% charged to be sure ensure a long life for the batteries and that the heat gun operates at it's peak.
- 2) Always check the batteries to be sure that the batteries are completely charged prior to use. Do this with a volt meter and measure the voltage of each section to be sure that it is 13.4 Volts?
- 3) If there is any doubt that the batteries are not fully charged, then replace them with ones that are and have the batteries fully inspected to be sure that they are operating properly by following the procedures outlined in this document.
- 4) Always use batteries from the same lot. Do not mix batteries from two different manufactured lots and manufactured dates.
- 5) BB-390 Batteries are fully charged as part of the standard procedure during manufacture. However, rechargeable batteries lose 1 percent of there charge each day. Thus, when the tool is unpacked for use in the field, the batteries may be well below charge levels at manufacture. Therefore, the batteries MUST be prepared for initial operation as follows:
- 6) Each individual battery must be fully discharged, and recharged twice. This is critical to the longevity of the battery in actual operation. Failure to conduct these charge/recharge procedures may shorten the life of the battery.
- 7) Do not charge the battery if it is warm to the touch. Batteries should be cooled to room temperature prior to process. If required, place them in a refrigerator to speed the process. Extremes in temperature damage are damaging to any battery, and rechargeable type batteries need to be handled with attention to longevity.
- 8) The MCH-100-A Battery Powered Heat Gun depends on the proper treatment of the power source. Current versions of the tool will operate for approximately 30 minutes before thermal protection shuts the tool down. This is a protective circuit built into the battery. The battery then requires a cooling down period, and normal recharge on the BTC-70819 Universal Battery Charger.

- 9) Batteries should be paired, of the same age and condition. Using an older battery paired with a brand new fresh battery can cause the older weaker battery to fail before its time.
- 10) While it is necessary to use what battery is available, proper mating within the circuitry is good practice. Whenever possible, replace both batteries with mated pairs. Check the date codes for warranty.
- 11) Do not mix BB-390-A/U older batteries with the newer version BB-390-B/U. Both versions will operate the MCH-100-A, but do not mix the types.

BELOW IS INFORMATION OBTAINED FROM THE U.S. ARMY ON THE PROPER TREATMENT AND CHARGING PROCEDURES REGARDING THE BB-390 BATTERIES

Rechargeable's Useful life

When to hold them / When to fold (Trash) them!

Yes, performance will drop after time and especially use. In the cell phone world not only do you toss the battery but the complete phone.

We understand you all use the BB-390 hard, thus after a few hundred charges the battery performance will drop, but not significantly. The batteries are rated for 224 charge cycles (Singars) in most cases they should last longer since the cells are rated for 500. So somewhere between 224-500 cycles the battery performance will drop. When you add age and your hard use ...the performance drop could be more dramatic.

(Note that I the BB-390 is rated for 224 cycles with the singars, they will be much less with the MCH-100-A)

Conditioning your rechargeable battery is KEY and may not have been with your battery stock yet....If not, go to www.malcomtechnologies.com/news-media and click on product support in the view by topic section on the right.

If your unit was issued rechargeables in 1997/1998 time frame than your unit was one of the first units to be outfitted with rechargeables. Thus, your BB-390 and BB-388 stock with Mfg. code 96 to 98 **are ready for replacement.** Even if these batteries are boxed up and look newtheir a great chance that they will not charge up. They are now well beyond their 3 year shelf life.

Older (96/97/98) BB-390s coming off a known good charger with low voltages (under 13.25volts per leg) may have internal cell damage or spent cells within. Time for replacement.

BB-390 Discharge Cap and Screening Device

BB-390 Self-Discharge Device (CAP) & Good Battery Quick Check BTF-70791



This new device will assist in conditioning and maintaining your BB-390 stock.

BB-390 Quick check! Your BB-390 has two 12 volt sections. Although your BB-390s may charge up well, provide full State of Charge (SOC) readings, and provide 13.25 volts or better at pins (1-4 & 2-5) after a charge, it may have internal damage that will prevent normal use in either or both 12 volt sections. The BB-390 Self-Discharge Device (CAP) places a load on each 12 volt section of the BB-390 to provide quick check of each section.

BB-390 Quick check Instructions!

1. Ensure the BB-390 has been charged in the last few months.
2. Place Self-discharge device (cap) on the BB-390.
 - a. If, both LEDs light "green".... your battery is ok. Both 12-volt sections are discharging properly. Remove cap and go on to next battery
 - b. If one or both LEDs **DO NOT light "green"**; then place BB-390 in "bad" battery pile. Remove cap and go on to the next battery...If the battery is one year old or less, call the # below for warranty info. *Note: Ensure cap is working with known good battery when you first use device. If the battery fails just after a charge, wait 1 hr for the battery low temp cut off to reset and then retest with cap.*

Notes:

1. The discharge device is not intended to measure how long the battery will run your equipment. The device is intended as a quick sanity check for ensuring both 12-volt sections are working and for discharging the battery. You still must ensure the BB-390 is fully charged prior to use.
2. If one 12 volt section is damaged you may still be able to use the batter, however your run time will be substantially reduced. Do NOT issue it as a Front Line Battery for your RTOs or other users. If the battery is a 96, 97, 98 vintage our recommendation is disposal. Order a fresh set of batteries. Always use two fresh batteries, never use one old and one new battery.

Discharging: The cap will discharge the BB-390 without requiring a power outlet. Discharge times will vary based on the BB-390 state of charge. A fully charged BB-390 currently takes 5 hours to discharge with the PP-8448/U and 24 hours with the self-discharge device. Discharge times drop dramatically if discharging BB-390s that had been discharged during use.

Discharge is recommended quarterly to ensure good running BB-390s either with the PP-8448/U or the discharge cap BTF-70791.

NEW BB-390s! If the date code on the BB-390s is within 6 months of opening the box then. ...Just charge it up and use it.

Discharging instructions:

1. Place Self-discharge device (cap) on the BB-390.
 - a. If, Both LEDs light "green".... your battery is ok. Both 12-volt sections are discharging properly. The discharge will continue until the lights turn off. Then, remove cap and go on to next battery.
 - b. If one or both LEDs **DO NOT light** "green"; then place BB-390 in "bad" battery pile . Remove cap and go on to the next battery. *Note: Please ensure cap is working with known good battery when you first use device.*

"Juice-up" your BB-390s!

Donald Brockel (Donald Brockel), 12/21/2002 - 02:49 PM

SPECIAL NOTES:

Pre-Condition Your BB-390s! (To Improve "out of box" performance):

To get the best BB-390 run times for your new batteries; we recommend the following:

1. Fully charge the BB-390 prior to first use. And run the heat gun in the shop to test it prior to taking into the field.
2. Prior to the next charge cycle, completely discharge the BB-390 in your equipment or discharger (either PP-8448 or new (BB-390 self-discharge Cap), BTF-70791.

Repeat the charge/discharge cycle one additional time.

Juice It Up:

If you want better run times from your new BB-390s (2000 or later versions) here are a few tips:

1. After the 1st charge cycle; turn off the charger and then restart the charger for another charge cycle. Leave the charger on for about an hour or until the charger flashes green. Leaving it on the charger longer is fine... or
2. Just leave them on the charger (trickle charging) for a few extra hours.

Self-discharge rate:

A charged BB-390 and for that matter all NiMH & Ni-Cad Batteries, will lose about 1% of their charge per day while waiting for use on the shelf.

**Thus....Ensure a fresh charge prior to missions!
A quick fresh charge (to flashing green) 7 days prior is our recommendation.**

BB-390 SCREENING:

Discharge cycle: Completely discharge the BB-390 in your equipment or discharger (either PP-8448 or new ([BB-390 self-discharge Cap](#))). **BTF-70791**

Quick go / no go: **BTF-70791** ([BB-390 self-discharge Cap](#)); is also a BB-390 quick checker that ensures that both 12 volts sections are working fully. For more info click link above. Thus, in a matter of minutes you could quickly check all your BB-390s stocks to ensure they are good to go on both 12 volt sections.

Recharge cycle: Charge BB-390s with the BTC-70819 (Solid green in 2 hours) or alternate method. BB-390s should have both SOC indicators working with 4-5 segments lit and voltages at each section, pins 1-4 & 2-5, greater than 13.25v. In addition, *voltage differences between pins 1-4/2-5 after charge should be within 3/4 Volt*. If not, your battery maybe ready for disposal or there is a problem with the charger or adapter. Recheck charger with a known good BB-390 or try another charger to check the suspect BB-390. If the SOC does not have 4-5 segments lit and the voltages are ok.. see note..

NOTE: *The SOC indicator and charging circuitry are independent of each other. Therefore, the battery may be fully charged even if the SOC indicator does not indicate the same. If after a full discharge and recharge cycle your SOC does not turn back on and your voltages are ok (13.25+), then tape over the SOC and continue to use the battery if your unit approves.*

Juice up new BB-390s! Improved BB-390 performance by completing two charge cycles on the PP-8444.

RED Fault Light on PP-8444 when charging BB-390s?: Do NOT THROW out your BB-390s YET!



If you get a red fault light when charging the BB-390, with a known good charger, most likely these batteries have been drained and left on the shelf for a few years. We can bring most of them back to life. A little less overall capacity, but they should provide reasonable power for you. Voltages at pins 1-4 and 2-5 are most likely well below 6 volts. So try the following:

- a. Quick method; Charge with BTC-70819. After the red fault light comes on, turn the charger off for a few seconds and then back on. Repeat this for about 4 cycles or until the amber light stays solid for more than 5 minutes. If the red fault light is to light it will

light within 5 minutes or sooner. If the charge indicator light stays flashing amber for more than 5 mins (and you know the charger and adapter are good) the battery should be disposed. If the amber stays steady and turns green a few hours later, you have brought your BB-390 back to life. But ensure you follow note below for conditioning this battery.

- b. Slow method: Let the batteries stay-on the PP-8444 even after the red light comes on. Leave the batteries on the charger until it goes solid green. It may take up to 12 hours to pump new life into them.
- c. Use **the alternate charge method** listed on the BB-390.