



SPECIAL ORDER



Series	Number	Originating Bureau	Effective Date	Expiration Date
2006	18	Operations EMS	2/27/06	N/A

Subject:

AutoPulse Battery Rotation

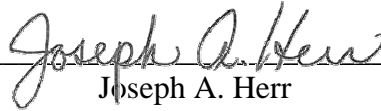
1. Over the last year, our Department has transitioned to the AutoPulse mechanical CPR device from the previously used Thumper. In order to keep these devices working efficiently when needed for critical calls, the manufacturer, ZOLL Medical, requires routine battery maintenance. This maintenance will keep the batteries operating at their peak condition and prevent unnecessary failures.
2. “B” Shift personnel will label each of the three batteries assigned to each unit using a permanent marker with the unit number followed by the letter A, B, and C. (example: P15-A, P15-B and P15-C)
 - a. Place the “A” battery in the AutoPulse device.
 - b. Place the “B” battery in the spare battery pouch within the AutoPulse soft case.
 - c. Place the “C” battery in the AutoPulse battery charger.
3. Once the batteries are marked, from this point forward, the batteries must be kept in alphabetical order and in proper rotation. It’s everyone’s responsibility to insure that batteries are in proper rotation for optimal charge cycling.
4. Batteries may be rotated on a daily basis, but must be rotated at least once a week during the ambulance weekly. Batteries should also be rotated after any period of use of the AutoPulse.
 - a. The battery will go from the AutoPulse → to the charger.
 - b. The battery will move from the spare battery pouch → into the AutoPulse device.
 - c. The battery will move from the battery charger → to the spare battery pouch.
5. Test cycling is automatically done by the battery charger after every 10th charge/discharge cycle. It shall be the responsibility of “B” Shift each month to perform the test-cycling on the batteries. **NOTE:** The test cycling needs to be started first thing in the morning as it takes approximately 10-12 hours per battery. The battery cycling will normally take 2 to 3 shifts to complete by “B” Shift. A log (attachment A) will be maintained showing the results from the test-cycling. Once test cycling has been started the battery can’t be removed until the cycling is completed. If a battery should fail the test cycling (red light) contact the Medical Duty Officer for further instructions.
6. Please refer to the ZOLL user guide page 4-4 titled “Understanding Test-Cycles” for more



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information from the manufacturer. Page 4-4 (attachment B) accompanies this S.O. for your convenience.



Joseph A. Herr
Fire Chief

AutoPulse Battery Rotation Log

Year _____ Unit # _____

January	Battery A	Battery B	Battery C	Comments
February	Battery A	Battery B	Battery C	Comments
March	Battery A	Battery B	Battery C	Comments
April	Battery A	Battery B	Battery C	Comments
May	Battery A	Battery B	Battery C	Comments
June	Battery A	Battery B	Battery C	Comments
July	Battery A	Battery B	Battery C	Comments
August	Battery A	Battery B	Battery C	Comments
September	Battery A	Battery B	Battery C	Comments
October	Battery A	Battery B	Battery C	Comments
November	Battery A	Battery B	Battery C	Comments
December	Battery A	Battery B	Battery C	Comments

Please write "Pass" or "Fail" in the appropriate box after test-cycle
 Green = Good test.
 Yellow = Charger still evaluating battery. DO NOT REMOVE FROM CHARGER.
 Red = Failed test. Notify MDO.

4.2 Understanding Test-Cycles

A test-cycle measures the Battery's charge holding capability by cycling the Battery through a charge-discharge-recharge sequence. Batteries with a high charge holding capability pass the test cycle and remain available for continued use. Batteries that no longer accept a charge will fail the test-cycle and must be replaced as they can no longer be used in the AutoPulse System.

Note: To maintain a Battery's performance and optimize its life, perform a test-cycle on it each month.

The Battery Charger will automatically perform a test-cycle:

- Every 10th charge/discharge cycle.
- When the Battery Charger detects that the Battery has been severely discharged (no status LEDs will illuminate when you press the Battery's Status Check button).

Test-cycles may be performed more frequently to evaluate the health of the Battery by pressing the Start Test button on the Battery Charger's Control Panel. A full test-cycle typically takes about 10 hours, but its length depends on factors such as ambient temperature and prior charge status.

Note: Do not remove a Battery during a test-cycle or the Battery's runtime will be unknown. Removing a Battery during a test-cycle may cause the Battery Charger to automatically enter a test-cycle mode the next time a Battery is inserted into the Battery Charger.

At the end of one full test-cycle, if the Battery Charger's TEST (amber) LED remains illuminated, the Power System has determined that the Battery's charge capacity remains compromised. In an attempt to restore the Battery, the Battery Charger will perform a second test-cycle (another six hours). If the Battery Charger's TEST LED remains illuminated, the Battery Charger will attempt to perform a third test-cycle (another six hours). Following the third test-cycle, the Battery will either be ready for operation (green READY LED illuminated) or the Battery will have failed the test-cycle and must be replaced (red FAIL LED illuminated).

A Battery will fail a test-cycle following 100 charge-discharge cycles.

Note: Discontinue use of any failed Battery as it will no longer hold an appropriate charge. Dispose of it properly. Refer to Section 5.2.3, "Disposing of Nickel-Metal Hydride Batteries".