Title: Defibrillator – AEDPLUS	Date: January 8, 2022
By: Zoll	**DISCLAIMER: THIS PROCEDURE PROVIDED "AS IS" AND WITH POSSIBLE FAULTS. USER MUST VERIFY BEFORE USE. NEITHER PROVIDER NOR WEBSITE ASSUMES ANY RESPONSIBILITY FOR ITS USE.**
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1. General
   Service Guideline for:
   Zoll AEDPLUS Defibrillator

Note: This guideline follows p 23 in the Service Manual.

2. Reference Documents @
   https://www.zoll.com/medical-products/product-manuals?product=AED+Plus
   Operator's Manual 9650-0300-01-SF_U
   Service Manual (Administrator's) 9650-0301-01 Rev. YD

3. Accessories / Test Gear
   ZOLL stat padz II; Zoll AED Plus Pedi Padz II 8900-0810-01
   Defibrillator Testor (see Appendix)

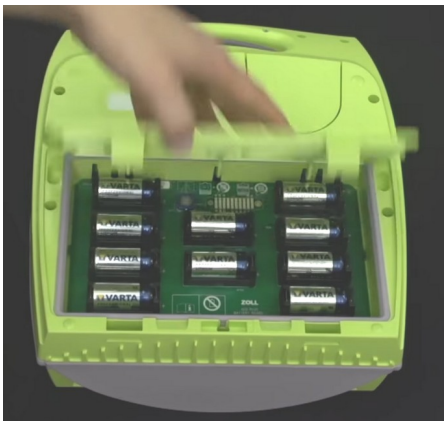
4. Battery Information
   The manufacturer mentions that the lithium cells (CR 123 Photo Flash lithium manganese dioxide batteries) be replaced every five years. See picture this page showing bottom of unit with battery cover removed. Recommended Battery vendors are Varta, Duracell, and Tenergy.

Note: Units are usually shipped with batteries uninstalled.

5. Basic PM Procedure

   5.1. Physical Inspection – check pads and case integrity. Brand new units will include all of the accessories shown in the picture above. Install batteries as required.

   5.2. Turn On and Self Test
   When off, the on/off button will initially show a red "X", which changes to a green check (/) within 4 to 5 seconds after the AED Plus is turned on. After turn-on (with pads connected), the unit will go through a self-test, and report "Unit OK".



   5.3. Self-Test Using Unopened Pad Set
   Hold the On-Button down for 5-7 seconds. During the self-test, the circular LED's will sequentially light with an elapsed time about 26 seconds. If the unit beeps on a regular basis, the pad is not plugged in, or the unit failed its self test. This check ends with the unit reporting "Unit OK". See Zoll memo on next page, as this step normally completes testing when passed.

TECHNICAL MEMO SUMMARY FROM ZOLL (January 30, 2015)

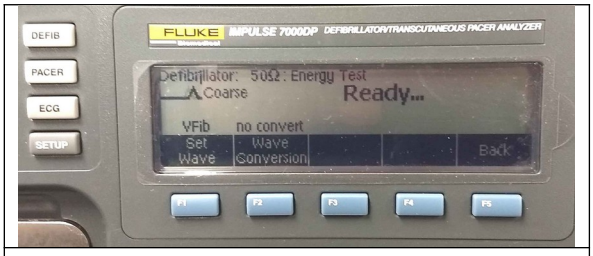
"The AED Plus has a built in self-test; the factory default for this test is every 7 days. The self-test performs the following: Battery Capacity; Electrodes Connection, verifies that the electrodes are connected; ECG Circuitry, verifies that the ECG signal acquisition and processing electronics are functional; Defibrillator charge and discharge circuitry, verifies that unit can charge and discharge at 2 joules, also conduct a full-energy test (200 Joules) one a month; Microprocessor Hardware/Software, verifies the proper functions of the microprocessor electronics and the integrity of the software. ZOLL Medical believes that the tests performed during the self-test will provide adequate testing of the product for general use;"

5.4. Testing Joule Output when Simulator Available
(Optional - See the partial technical memo from Zoll in the Appendix)

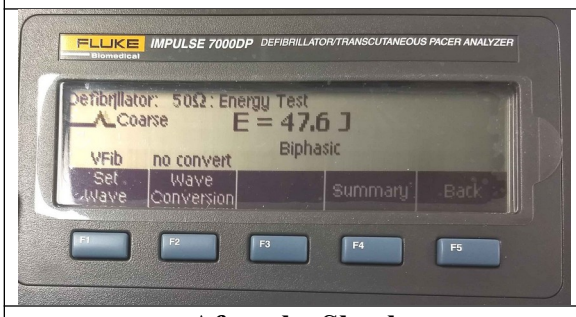
Note: In order to perform a traditional joule check of the unit, the defib analyzer must be able to simulate body resistance (~50 ohms), and present a non-normal wave form such as Ventricular fibrillation (V-fib). This guideline deals with only one analyzer. See Appendix.

Turn unit off. To save the cost of using a new pad set, connect the two HV AED connector pins to the associated pins in the simulator.

Follow the setup steps for the Fluke simulator (In Appendix). When the simulator display reads "Ready", turn on the AED; it will self-test, analyze, and shortly say "Shock Advised", "Press Flashing Button". The shock delivery then occurs almost immediately. Typical output will read 45-50 joules.



Just Prior to Shock



After the Shock

5.5. Final Wrap Up
To speed up patient access time, the connected pad set is normally stored unopened under the top cover, ready to go.

APPENDIX
USING THE FLUKE 7000DP ANALYZER

1. Power on – Round Green Button
2. Note: Connect power adapter if analyzer needed for more than a short interval.
3. At message "Select a function…", Press <DEFIB>
4. At "Select a test…", choose <Energy> aka <F1>
5. Press "Set Wave" aka <F1>
6. Press "Wave Form" aka <F1>
7. Hit the discrete blue "up arrow"; "Vfib" should appear.
8. Hit <F2> Amplitude
9. Hit the discrete blue "up arrow" button a few times until amplitude reads at least 3 mv.
10. Hit Done. The display should look like the photo to the right.
    Analyzer is ready.
11. Reset the analyzer display.