

Title: Defibrillator – Philips XL	Date: October 6, 2019
By: Philips Healthcare, Andover, MA	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
Applies to Phillips Model HeartStart XL and Heartstream XL defibrillators. The Heartstream version (M4735A) does not have a Pacer section.



2. Reference Documents
M4735-91900 User Manual
M4735-90900 Service Manual
www.frankshospitalworkshop.com
<http://incenter.medical.philips.com/default.aspx?tabid=730>

3. Tools / Fixtures / Labels
EKG Simulator -- Example: “QED-6”
Defibrillator Simulator
Optional – Test Load M3725A
Safety Analyzer ex: Fluke 232D



4. Basic PM Procedure
 - 4.1. Physical Inspection – check case & cord integrity, and battery age. Plug in unit.
 - 4.2. Turn on unit via the rotary switch. Unit will normally go thru a set of turn-on self-diagnostics. Connect the three ECG leads to the EKG or defib simulator, matching colors and or other designators.
Check that the BattCharge LED is lit.

Note: ECG Setup (only for simulator shown in photo) Simulator turns on via the 0/1 switch. After its short self-test, press the key <Energy> so the display reads this.

- 4.3. ECG Results. An ECG waveform will appear on the Defibrillator. If not, use the <LEAD SELECT> button; “Lead 1” corresponds with the 3-lead EKG cable. Next, check that the volume and waveform size buttons work.
- 4.4. Strip Chart
With the waveform still on display, press <Strip> and verify the printer waveform. Note the date and time in the margin of the paper.
- 4.5. Date and Time Check
If date or time is wrong, go to “Configuration Menu” in the “Extended Testing” below for instructions on updating. See Fig 4-31 in the service manual if the small internal lithium battery (maintains the internal config) requires replacement.

4.6. SP02 Check

If supplied, activate SP02 using oval button 6 (soft key). Using a finger of a healthy person, results of 91 – 99 are normal.

4.7. Joule Test (Paddles).

Note: To lessen paper waste, slide the printer lid to the right and mechanism will temporarily disengage.

Set the defib rotary dial to 5. Set each paddle on one of the metallic contact disks on the simulator. On one of the paddles is a bar graph that will indicate if contact to the simulator is adequate. Press the yellow pad button to charge the unit. When charged (typically after a few seconds) the unit's tone will change and its display will indicate some form of ready. To deliver the shock, press both orange buttons simultaneously. The reading on the simulator should be within 4% +/- 1 joule of the setting on the difib dial. Repeat for several other settings: 50, 100, 200. Charge time is ~10 secs at 200 joules

4.8. Joule Test (Flexible Pads). Skip if this a new out-of-box unit. Replace the paddle cable with the "pads" cable. Get a defib pad set and connect it to this cable. Stick each pad over one of the simulator's metallic contact disks. On the defib, set the power to 5, then press <Charge>. When charged (typically after a few seconds) the unit's tone will change and its display will indicate some form of ready. To deliver the shock, press <Shock>. When using pads, the reading on the simulator display low, usually 5% less than the chosen dial setting.

4.9. Battery Quality Check and Low Battery

With unit on/stand-by, remove the power cord. The unit should run on battery this way for approximately 1 hour. Alternatively, see service manual for an extended battery capacity test.

The message "Low Battery" is displayed when the main battery is low and needs recharging. Per manual: "This message indicates that the battery has a remaining capacity to provide only about ten minutes of monitoring time and five shocks."

Note: The main battery is a very common lead-acid type used in various other devices, and should not exceed \$40 normally.

Note: Without a battery installed, the defibrillator will take longer to charge when powered with AC. To ensure optimal performance, always have a fully charged battery in the defibrillator, even when using AC power.

4.10. Printer and Labeling

Install the paper per the graphic underneath the printer lid.

4.11. Labeling

Add the PM due-date sticker. (*Note: as of 2007 the PM interval is a function of the department using the device.*) Add the hospital inventory stickers if new.

5. Extended PM Procedure (Self-test and internal checks)

5.1. Diagnostic Menu: Pressing oval buttons (soft keys) 4 and 6, turn unit on to show menu of available self-tests. Connect the external 50 ohm load using the appropriate supplied cable. With "Extended Self Test" highlighted, execute (press ENTER), and the self-test sequence begins which takes about 15 seconds. The recorder will automatically print the results in short form. Check the date.

Optional: Under this menu, run "Controls Test".

5.2. Configuration Menu: Pressing oval buttons -- soft keys 4 and 5, turn unit on to show basic setup menu. Verify and change if necessary, date and time.

5.3. Patient Leakage Test / Line Leakage Test (refer to the testor's manual for specific instructions on the following:

Using a safety testor with ECG terminals, connect the defib AC line cord and the three patient EKG leads to the fixture.

* AC Line leakage with ground open is typically 150uA, 200 max.

* The "all patient leads to ground" leakage is typically 3uA, 10uA max.