

**ZOLL**  
**AEDPLUS™**

# Service Manual



**ZOLL**

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An issue date and revision level for this manual appear on the front cover.

If more than three years have elapsed since this date, contact ZOLL Medical Corporation to determine if additional product information updates are available.

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# Table of Contents

## Preface

Related Documentation .....	iv
Conventions .....	iv
Symbols .....	v
Safety Considerations.....	vi
Warranty .....	vi
Technical Service .....	vii
Returning a Unit for Service .....	vii

## Chapter 1 Maintenance Tests

Preparations for Testing .....	1-2
Test Equipment .....	1-2
1.0 Physical Inspection.....	1-3
2.0 Preventive Maintenance Test.....	1-4
3.0 Manual Self-Test .....	1-9

## Chapter 2 Troubleshooting

Troubleshooting the AED Plus Unit .....	2-2
AED Plus Error Log Messages .....	2-4

## Appendix A Maintenance Tests Checklist

Instructions .....	A-2
ZOLL AED Plus Maintenance Tests Checklist.....	A-3

## Index

## TABLE OF CONTENTS

---

# Preface

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ZOLL Medical Corporation provides this manual for technicians who service the AED Plus™ device or diagnose malfunctions. This manual contains the following sections:

**Preface** — Provides safety warnings and an overview of the manual's contents. Review this section thoroughly before servicing an AED Plus unit.

**Chapter 1, "Maintenance Tests"** — Provides the recommended procedures for evaluating the condition and performance of the AED Plus unit.

**Chapter 2, "Troubleshooting"** — Describes possible problems and solutions and lists the error log messages that indicate the unit requires technical service.

**Appendix A, "Maintenance Tests Checklist"** — Provides a checklist for recording the results of maintenance tests.

**Note:** The AED Plus contains no user-replaceable parts.

## Related Documentation

In addition to this service manual, the following manuals are available for the AED Plus unit:

- *AED Plus Operator's Guide* (9650-0300-01) — Describes what the rescuer sees, hears, and does while operating the unit.
- *AED Plus Administrator's Guide* (9650-0301-01) — Describes the features and functions of the unit and the procedures for configuring and maintaining it.
- *AED Plus Simulator Operator's Guide* (9651-0800-01) — Describes the AED Plus simulator, which you can use to test the AED Plus unit's response to various simulated cardiac rhythms.

## Conventions

This manual uses uppercase italics for audible prompts and for text messages displayed on the screen (for example *DON'T TOUCH PATIENT*, *ANALYZING*).

	Within test or troubleshooting procedures, this symbol indicates an audible prompt or message; for example:
	<i>UNIT OK</i>

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**WARNING!** **Warning statements alert you to conditions or actions that can result in personal injury or death.**

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**Caution** Caution statements alert you to conditions or actions that can result in damage to the unit.

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# Symbols

Symbols used in this manual or on the equipment include the following:

	Class II equipment
	Defibrillation-protected Type BF patient connection
	<b>ATTENTION:</b> Refer to the operator's guide for more information
	<b>WARNING:</b> Dangerous voltage
	New battery cells
	Not new battery cells
	Push button
	Do not push button
	Recommended manufacturer
	Do not use this manufacturer
	Unit equipped to treat adult and pediatric patients
	<b>Conformité Européenne</b> Complies with medical device directive 93/42/EEC.

## Safety Considerations

Only qualified personnel should service or disassemble an AED Plus unit. Before using this device, read the *AED Plus Administrator's Guide*. Before servicing or disassembling any equipment, review these safety considerations and read this manual carefully.

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**WARNING!** **The AED Plus unit can generate as much as 2250 volts with sufficient current to cause lethal shocks.**

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Before discharging the defibrillator, warn everyone near the equipment to "STAND CLEAR."

Use only Type 123A lithium manganese dioxide batteries from manufacturers recommended by ZOLL. Discard used batteries properly.

Do not recharge, disassemble, or dispose of batteries in fire. Batteries might explode if mistreated.

This device is protected against interference from radio frequency emissions typical of the two-way radios and cellular telephones used in emergency service and public safety activities. You should assess the device's performance in your typical operating environment to determine the likelihood of radio frequency interference (RFI) from high-power sources.

## Warranty

For warranty information, refer to the *AED Plus Administrator's Guide*.

To maintain the warranty, strictly follow the instructions and procedures in this service manual. Unit failure that is attributable to the use of accessories that are not manufactured by ZOLL might void the ZOLL warranty.

## Technical Service

If the AED Plus unit requires service, contact the ZOLL Technical Service Department or your local distributor.

Telephone:      1-800-348-9011 (U.S.A. customers only)  
                  1-978-421-9655

Fax:                1-978-421-0010

When requesting service, please provide the following information to the service representative:

- Unit serial number
- Description of the problem
- Department where the equipment is used and the name of the person to contact
- Purchase order to allow tracking of loan equipment
- Purchase order for a unit with an expired warranty

## Returning a Unit for Service

Before sending a unit to the ZOLL Technical Service Department for repair, obtain a service request (SR) number from the service representative.

Remove all batteries from the unit. Pack the unit in its original container or equivalent packaging. Be sure the assigned service request number appears on the package.

<b>For customers</b>	<b>Return the unit to</b>
In the U.S.A.	ZOLL Medical Corporation 269 Mill Road Chelmsford, MA 01824-4105  Attention: Technical Service Dept. [ SR number ]
In Canada	ZOLL Medical Canada Unit #15 5266 General Road Mississauga, Ontario L4W 1Z7  Attention: Technical Service Dept. [ SR number ]  Telephone: 1-866-442-1011
In other locations	The nearest authorized ZOLL Medical Corporation representative.  To locate an authorized service center, contact the International Sales Department at  ZOLL Medical Corporation 269 Mill Road Chelmsford, MA 01824-4105  Telephone: 1-978-421-9655



# Chapter 1

## Maintenance Tests

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This chapter describes the procedures for routine testing of the AED Plus unit.

A test typically consists of multiple steps, each of which requires a pass/fail rating. For each step, perform the specified action and then verify that the expected results occur. If all expected results occur, assign a “Pass” rating to the step; otherwise, assign it a “Fail” rating.

This chapter includes the following inspection and test procedures:

- “1.0 Physical Inspection” on page 1-3
- “2.0 Preventive Maintenance Test” on page 1-4
- “3.0 Manual Self-Test” on page 1-9

## Preparations for Testing

- Gather the required equipment listed in the next section.
- Perform all the steps within each test procedure in the order specified.

If testing results indicate that the batteries must be replaced, you will need a set of 10 fully charged Type 123A batteries.

## Test Equipment

For some tests, you need one or more of these items:

- ZOLL universal adapter cable
- Fluke® Impulse 4000 Defibrillator/Pacer Performance Analyzer (Fluke Biomedical/DNI Nevada) with 1.06 software or higher

The following items are optional:

- ZOLL AED Plus Simulator —  
When connected to an AED Plus unit, the simulator can send it various simulated cardiac rhythms (ventricular fibrillation, normal sinus rhythm, or asystole) and optional simulated chest compression readings (rate and depth), so that you can test the unit's response.
- ZOLL Administration Software (ZAS) —  
When installed on a personal computer or personal digital assistant that has an IrDA® (wireless infrared) interface, the ZAS application can communicate with an AED Plus unit in nonrescue mode to retrieve its usage history, hardware and software configuration, and error log. You can also use ZAS to view or modify the unit's configurable settings and to retrieve event data.

For ZOLL part numbers, refer to the accessories list in the *AED Plus Administrator's Guide*.

## 1.0 Physical Inspection

Use this procedure to ensure that the unit shows no signs of damage or excessive wear.

### Tools Needed

None.

### Test Setup

None.

### Test Procedure

Observe the following:		Pass	Fail
1.1	Is the unit clean?	<input type="checkbox"/>	<input type="checkbox"/>
1.2	Are all signs of wear reasonable and not excessive?	<input type="checkbox"/>	<input type="checkbox"/>
1.3	Are the top panel and housing undamaged and free of cracks?	<input type="checkbox"/>	<input type="checkbox"/>
1.4	Are input connectors clean and undamaged?	<input type="checkbox"/>	<input type="checkbox"/>
1.5	If electrodes are preconnected, is the cable free from damage, are the pads sealed within the packaging, and are the electrodes within the expiration date shown on the packaging?	<input type="checkbox"/>	<input type="checkbox"/>

## 2.0 Preventive Maintenance Test

Use this test to verify that the AED Plus unit is working properly and ready for use.

For an alternative test using the AED Plus Simulator, refer to the *AED Plus Administrator's Guide*.

**Note:** To verify that the delivered energy for the first, second, and third shocks corresponds to the unit's preconfigured adult energy levels, use the ZOLL Administration Software (ZAS) to obtain the current configuration of the unit.

### Tools Needed

- Fluke Impulse 4000 Defibrillator/Pacer Performance Analyzer or equivalent
- Universal adapter cable

### Test Setup

- Turn off the AED Plus unit, remove the cover, and unplug the preconnected electrodes. Keep the electrodes so they can be reconnected later.
- Connect the universal adapter cable to the AED Plus unit and to the analyzer.
- Turn on the analyzer and set its function to VF (ventricular fibrillation).

### Variations in Messages

When verifying messages in the test results, please be aware of the following issues:

- The wording of some messages is configurable. The following table shows equivalent messages.

CHECK RESPONSIVENESS	CHECK PATIENT
CHECK CIRCULATION	CHECK PULSE
IF NO CIRCULATION START CPR	IF NO PULSE START CPR
IF NO CIRCULATION CONTINUE CPR	IF NO PULSE CONTINUE CPR
TREATMENT ADVISED	SHOCK ADVISED
NO TREATMENT ADVISED	NO SHOCK ADVISED
PRESS TREATMENT BUTTON	PRESS SHOCK BUTTON
RELEASE TREATMENT BUTTON	RELEASE SHOCK BUTTON
TREATMENT DELIVERED	SHOCK DELIVERED
NO TREATMENT DELIVERED	NO SHOCK DELIVERED

- The message that reports the detected electrode type can be either *ADULT PADS* or *PEDIATRIC PADS*.
- Some messages are issued only if the unit is configured to do so. If an optional message is not issued during a test, do not consider this a failure.
- In some cases a text message on the display screen is abbreviated or otherwise differs slightly from the associated voice message.

**Test Procedure**

Test	Action	Expected Result(s)	Pass	Fail
2.1	Turn on the AED Plus unit.	<ul style="list-style-type: none"> <li>◀ <b>UNIT OK</b></li> <li>◀ <b>ADULT PADS</b></li> <li>◀ <b>DON'T TOUCH PATIENT, ANALYZING</b></li> <li>◀ <b>TREATMENT ADVISED</b> (or <b>SHOCK ADVISED</b>)</li> <li>◀ <b>DON'T TOUCH PATIENT.</b></li> <li>◀ <b>PRESS TREATMENT BUTTON</b> (or <b>PRESS SHOCK BUTTON</b>)</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>
2.2	Press the <b>Treatment</b> button (first shock).	<ul style="list-style-type: none"> <li>• Analyzer indicates a defibrillator discharge at the configured first-shock energy level (120, 150 or 200 joules ±15%).</li> <li>◀ <b>TREATMENT DELIVERED</b> (or <b>SHOCK DELIVERED</b>)</li> <li>• An updated shock count appears on the display (<b>SHOCKS: 1</b>).</li> <li>◀ <b>DON'T TOUCH PATIENT, ANALYZING</b></li> <li>◀ <b>TREATMENT ADVISED</b> (or <b>SHOCK ADVISED</b>)</li> <li>◀ <b>DON'T TOUCH PATIENT.</b></li> <li>◀ <b>PRESS TREATMENT BUTTON</b> (or <b>PRESS SHOCK BUTTON</b>)</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>

Test	Action	Expected Result(s)	Pass	Fail
2.3	Press the <b>Treatment</b> button (second shock).	<ul style="list-style-type: none"> <li>Analyzer indicates a defibrillator discharge at the configured second-shock energy level (120, 150 or 200 joules <math>\pm 15\%</math>).</li> </ul> <p>► <b>TREATMENT DELIVERED</b> (or <b>SHOCK DELIVERED</b>)</p> <ul style="list-style-type: none"> <li>An updated shock count appears on the display (<b>SHOCKS: 2</b>).</li> </ul> <p>► <b>DON'T TOUCH PATIENT,</b> <b>ANALYZING</b></p> <p>► <b>TREATMENT ADVISED</b> (or <b>SHOCK ADVISED</b>)</p> <p>► <b>DON'T TOUCH PATIENT.</b></p> <p>► <b>PRESS TREATMENT BUTTON</b> (or <b>PRESS SHOCK BUTTON</b>)</p>	<input type="checkbox"/>	<input type="checkbox"/>
2.4	Press the <b>Treatment</b> button (third shock).	<ul style="list-style-type: none"> <li>Analyzer indicates a defibrillator discharge at the configured third-shock energy level (120, 150 or 200 joules <math>\pm 15\%</math>).</li> </ul> <p>► <b>TREATMENT DELIVERED</b> (or <b>SHOCK DELIVERED</b>)</p> <ul style="list-style-type: none"> <li>An updated shock count appears on the display (<b>SHOCKS: 3</b>).</li> </ul> <p>These three prompts are optional:</p> <ul style="list-style-type: none"> <li>— <b>OPEN AIRWAY</b></li> <li>— <b>CHECK BREATHING</b></li> <li>— <b>GIVE TWO BREATHS</b></li> </ul> <p>► <b>CHECK CIRCULATION</b> (or <b>CHECK PULSE</b>)</p> <p>► <b>IF NO CIRCULATION START CPR</b> (or <b>IF NO PULSE START CPR</b>)</p>	<input type="checkbox"/>	<input type="checkbox"/>

Test	Action	Expected Result(s)	Pass	Fail
	Turn off the AED Plus unit. Set the analyzer to NSR (normal sinus rhythm).			
2.5	Turn on the AED Plus unit.	<ul style="list-style-type: none"> <li>◀ UNIT OK</li> <li>◀ ADULT PADS</li> <li>◀ DON'T TOUCH PATIENT, ANALYZING.</li> <li>◀ NO TREATMENT ADVISED (or NO SHOCK ADVISED)</li> </ul> <p>These three prompts are optional:</p> <ul style="list-style-type: none"> <li>- OPEN AIRWAY</li> <li>- CHECK BREATHING</li> <li>- GIVE TWO BREATHS</li> </ul> <ul style="list-style-type: none"> <li>◀ CHECK CIRCULATION (or CHECK PULSE)</li> <li>◀ IF NO CIRCULATION START CPR (or IF NO PULSE START CPR)</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>
2.6	<p>Lift the puck that is attached to the universal adapter cable. Move the puck up and down very slightly (no more than 1 inch or 2 cm) and continue to do so.</p> <p>If the unit has a display, prevent the bar on the chest compression gauge from extending into the area between the lower two lines.</p>	<ul style="list-style-type: none"> <li>• Unit emits spaced tones as a guide for performing chest compressions at the proper rate.</li> </ul> <ul style="list-style-type: none"> <li>◀ PUSH HARDER</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>
2.7	<p>Increase the vertical motion of the puck (about 2 to 3 inches or 5 to 8 cm).</p> <p>If the unit has a display, make sure the bar on the chest compression gauge extends into the area between the lower two lines.</p>	<ul style="list-style-type: none"> <li>• Unit emits spaced tones as a guide for performing chest compressions at the proper rate.</li> </ul> <ul style="list-style-type: none"> <li>◀ GOOD COMPRESSIONS</li> </ul> <p>The following prompt is optional:</p> <ul style="list-style-type: none"> <li>- IF NO CIRCULATION CONTINUE CPR (or IF NO PULSE CONTINUE CPR)</li> </ul> <ul style="list-style-type: none"> <li>◀ STOP CPR</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>

Test	Action	Expected Result(s)	Pass	Fail	
	Put the puck down and turn off the AED Plus unit. Disconnect the universal adapter cable from the AED Plus unit.				
<b>2.8</b>	Wait 10 seconds and then turn on the AED Plus unit.	<p>► <b>PLUG IN CABLE</b></p> <p>This prompt is optional:</p> <ul style="list-style-type: none"> <li>– <b>STAY CALM</b></li> </ul> <p>► <b>CHECK RESPONSIVENESS</b> (or <b>CHECK PATIENT</b>)</p> <p>This prompt is optional:</p> <ul style="list-style-type: none"> <li>– <b>CALL FOR HELP</b></li> </ul> <p>These three prompts are optional:</p> <ul style="list-style-type: none"> <li>– <b>OPEN AIRWAY</b></li> <li>– <b>CHECK BREATHING</b></li> <li>– <b>GIVE TWO BREATHS</b></li> </ul> <p>► <b>CHECK CIRCULATION</b> (or <b>CHECK PULSE</b>)</p> <p>► <b>PLUG IN CABLE</b></p>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>2.9</b>	Check the expiration date on the previously connected defibrillation electrodes.  If the electrodes have not expired, reconnect them to the unit; otherwise, connect a fresh package of defibrillation electrodes.	► <b>ADULT PADS</b> (or <b>PEDIATRIC PADS</b> )	<input type="checkbox"/>	<input type="checkbox"/>	
	Turn off the AED Plus unit.				
<b>2.10</b>	After 90 seconds, check the Status indicator on the unit.	<ul style="list-style-type: none"> <li>• The Status indicator shows a green check.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	

## 3.0 Manual Self-Test

Use this test to initiate the unit's self-diagnostic procedure, which verifies the following:

- Battery usage since last reset.
- Defibrillation electrodes are properly connected.
- ECG signal acquisition and processing circuitry is functional.
- Defibrillator charge and discharge circuitry (operational at 2 joules) is functional.
- Microprocessor hardware and software are functional.
- CPR monitoring circuitry and compression depth sensor are functional (when *CPR-D•padz* are attached).
- Audio output circuitry is functional.
- Display screen (if present) is functional.

### Tools Needed

- None.

### Test Setup

- Turn off the AED Plus unit.
- If they are not already in place, preconnect defibrillation electrodes to the unit.

### Test Procedure

Test	Action	Expected Result(s)	Pass	Fail
3.1	Press and hold the <b>ON/OFF</b> button for at least 5 seconds.	<ul style="list-style-type: none"> <li>• Within 10 seconds after the unit is turned on, the Status indicator displays a green check.</li> <li>• On the top panel, the indicator lights for the rescue actions illuminate in sequence.</li> </ul> <p> <i>UNIT OK</i></p>	<input type="checkbox"/>	<input type="checkbox"/>
	If an IrDA connection is established, turn off the unit; otherwise, the unit shuts down automatically.			



# Chapter 2

# Troubleshooting

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This chapter describes common technical issues encountered during routine maintenance or after a malfunction of the AED Plus unit. This chapter also lists critical AED Plus error log messages that indicate the unit requires technical service.

This chapter contains the following sections:

- “Troubleshooting the AED Plus Unit” on page 2-2
- “AED Plus Error Log Messages” on page 2-4

If this chapter does not help you resolve the problem, call the ZOLL Technical Service Department for assistance. For contact information, refer to page vii.

## Troubleshooting the AED Plus Unit

The following tables include common issues and their solutions. First, try the recommendations given under “Operator Action.” If these steps do not remedy the problem, follow the suggestions under “Technical Action.”

For information on contacting ZOLL Technical Service, refer to page vii.

**Table 2-1. AED Plus Troubleshooting**

Problem	Operator Action	Technical Action
Status indicator shows a red “X”.	<ul style="list-style-type: none"> <li>— Press and hold the <b>ON/OFF</b> button for at least 5 seconds to perform a self-test.</li> <li>— Verify that the electrode cable is properly plugged into the patient cable connector.</li> <li>— Replace the electrodes.</li> </ul>	If the unit continues to fail, remove it from service and contact Technical Service.
► <b>UNIT FAILED</b>	<ul style="list-style-type: none"> <li>— Turn the unit off and then press and hold the <b>ON/OFF</b> button for at least 5 seconds to perform a self-test.</li> <li>— Verify that the electrode cable is properly plugged into the patient cable connector.</li> <li>— Replace the electrodes.</li> </ul>	If the unit continues to fail, remove it from service and contact Technical Service.
Unit beeps while turned off.	<ul style="list-style-type: none"> <li>— Verify that the electrode cable is properly plugged into the patient cable connector.</li> <li>— Turn the unit off and then press and hold the <b>ON/OFF</b> button for at least 5 seconds to perform a self-test. Verify that a green check appears in the Status indicator.</li> </ul>	If the unit continues to beep, remove it from service and contact Technical Service.
► <b>CHANGE BATTERIES</b>	— Replace all batteries with new ones. When prompted, press the battery reset button.	If the message persists, remove the unit from service and contact Technical Service.
► <b>PLUG IN CABLE</b>	— Ensure that the electrode cable is properly plugged into the patient cable connector.	If the message persists, remove the unit from service and contact Technical Service.
► <b>ANALYSIS HALTED KEEP PATIENT STILL</b>	— Keep the patient still during ECG analysis. If transporting the patient by stretcher or vehicle, stop all patient movement during analysis.	If the message persists, remove the unit from service and contact Technical Service.
► <b>NO SHOCK DELIVERED (or NO TREATMENT DELIVERED)</b>	<ul style="list-style-type: none"> <li>The <b>Treatment</b> button was not pressed or an internal error occurred.</li> <li>— When prompted to press the button, do so within 30 seconds.</li> </ul>	If an internal error occurred (no shock was delivered when the <b>Treatment</b> button was pressed properly), remove the unit from service and contact Technical Service.

**Table 2-1. AED Plus Troubleshooting (continued)**

Problem	Operator Action	Technical Action
◀ RELEASE SHOCK BUTTON (or RELEASE TREATMENT BUTTON)	— Release the <b>Treatment</b> button. Do not press the button until the charge-ready tone sounds and the button begins flashing.	If the message persists, remove the unit from service and contact Technical Service.

## AED Plus Error Log Messages

The AED Plus unit records internal errors in an error log, which you can retrieve by using a Windows-based personal computer with ZOLL Administration Software (ZAS).

To retrieve the error log, follow these steps:

Step	Action
1	Turn off the AED Plus unit.
2	Start the ZOLL Administration Software (ZAS) on the computer.
3	Position the AED Plus unit so that its IrDA port has a clear line-of-sight with the computer's IrDA port and the ports are about 10 to 18 inches (25 to 45 cm) apart.
4	Press and hold the unit's <b>ON/OFF</b> button for at least 5 seconds to start the unit in nonrescue mode.
5	After the unit issues the message <i>COMMUNICATIONS ESTABLISHED</i> , refer to the ZAS help for instructions on saving the unit's history file and viewing the included error log.

**Note:** After saving the error log file on the computer, you can use ZAS to clear the error log on the AED Plus unit.

Table 2-2 lists the critical error log messages.

**Important:** If any of these messages appears in the error log, contact ZOLL Technical Service as described on page vii.

**Table 2-2. AED Plus Error Log Messages**

Error No.	Error Message
1	The patient relay is not working properly
2	Attempting to charge the capacitor while the SAFELINE in the CPLD is set - should not charge
3	The capacitor takes too long to charge
4	The H-bridge test failed while the bridge was disabled. There should have been 0 current measured.
5	VCAP1 and VCAP2 are not within a defined range of each other
6	The H-bridge test failed while the bridge was enabled - an invalid current reading was taken during the positive test on the H-bridge
7	The H-bridge test failed while the bridge was enabled - an invalid current reading was taken during the negative test on the H-bridge
8	Defib did not charge during the power-on charge test
9	The Defib task is not receiving A2D vCap1 event samples - needed for charging
10	FnSafety has determined that the charge has dropped below a specified value during the holding of charge.
11	The capacitor failed to charge
12	The capacitor over-charged
13	The capacitor contained an unsafe voltage in an idle state

**Table 2-2. AED Plus Error Log Messages (continued)**

Error No.	Error Message
14	Patient impedance experienced a short
15	The A2D is getting non-accurate readings during its test
17	The message queue overflowed
18	PowerOn task has timed out while waiting for a self test result to come back.
19	Calibration faults that occur during a clinical event.
20	An unexpected error has occurred when calling a Nucleus operation.
21	An unexpected error has occurred when calling a Rhapsody operation.
22	An unexpected coding error has occurred.
23	No Language installed - corrupt language.
24	The shock button is pressed/stuck.
25	The ECG Calibration data is invalid
26	The Patient Impedance Calibration data is invalid
27	A critical flash error has occurred
28	The WatchDog is not enabled during clinical event
29	The clock test failed
<b>Note:</b> Error numbers 256 and greater indicate noncritical conditions.	



# Appendix A

## Maintenance Tests Checklist

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This appendix provides a sample maintenance checklist for the AED Plus unit. To ensure that the equipment is functioning properly and ready for emergency use, complete the checklist periodically according to local protocols.

Your organization can create custom checklists for your specific requirements.

## **Instructions**

To maintain records for maintenance testing, photocopy the checklist shown on the following pages. The checklist includes an entry for each test described in this manual. Use these copies to record the results of your testing and then retain the copies for your records.

# ZOLL AED Plus

## Maintenance Tests Checklist

Use this checklist to record the results of AED Plus maintenance tests and keep it for your records. For a description of each numbered test, refer to Chapter 1, "Maintenance Tests" in the *AED Plus Service Manual*.

Serial No.	_____
Location	_____
Date	_____
Tester	_____
Signature	_____

<b>Result of Check:</b>	<b>1.0 Physical Inspection</b>		<b>2.0 Preventive Maintenance Test</b>		<b>3.0 Manual Self-Test</b>	
	PASS	FAIL	PASS	FAIL	PASS	FAIL
<input type="checkbox"/> No action required						
<input type="checkbox"/> Minor problems corrected	1.1	<input type="checkbox"/>	<input type="checkbox"/>	2.1	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Disposable supplies replaced	1.2	<input type="checkbox"/>	<input type="checkbox"/>	2.2	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Major problems identified (unit out of service)	1.3	<input type="checkbox"/>	<input type="checkbox"/>	2.3	<input type="checkbox"/>	<input type="checkbox"/>
	1.4	<input type="checkbox"/>	<input type="checkbox"/>	2.4	<input type="checkbox"/>	<input type="checkbox"/>
	1.5	<input type="checkbox"/>	<input type="checkbox"/>	2.5	<input type="checkbox"/>	<input type="checkbox"/>
<b>Additional Remarks</b>			2.6	<input type="checkbox"/>	<input type="checkbox"/>	
			2.7	<input type="checkbox"/>	<input type="checkbox"/>	
			2.8	<input type="checkbox"/>	<input type="checkbox"/>	
			2.9	<input type="checkbox"/>	<input type="checkbox"/>	
			2.10	<input type="checkbox"/>	<input type="checkbox"/>	



# Index

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## A

Administration software, ZOLL 1-2, 2-4  
Analyzer 1-2, 1-4

## C

Checklists for maintenance tests A-1  
Configurable prompts 1-4  
Conventions used in manual iv

## D

Defibrillator analyzer 1-2, 1-4  
Documentation iv

## E

Error log 2-4

## H

History file, device 2-4

## I

Impulse 4000 analyzer 1-2, 1-4  
Inspection, physical 1-3  
IrDA port 1-2

## L

Log, error 2-4

## M

Maintenance tests 1-1  
checklists A-1  
equipment needed 1-2  
prerequisites 1-2  
preventive 1-4  
Manual self-test 1-9  
Manuals, related iv  
Messages  
error log 2-4  
wording 1-4

## P

Physical inspection 1-3  
Port, IrDA 1-2  
Preventive maintenance test 1-4  
Prompts, configurable 1-4

## INDEX

---

### R

Radio frequency interference vi  
Repairs vii  
Returns vii  
RFI vi

Tests, maintenance 1-1  
checklist A-1  
prerequisites 1-2  
Troubleshooting 2-1  
common problems 2-2

### S

Safety considerations vi  
Self-test, manual 1-9  
Service, technical vii  
Simulator iv, 1-2  
Software, ZOLL Administration 1-2, 2-4

### V

Voltage warning vi

### W

Warranty vi  
Wording, configurable 1-4

### T

Technical Service vii

### Z

ZOLL Administration Software (ZAS) 1-2, 2-4