OPERATING INSTRUCTIONS
CAUTIONS

This instrument is to be used by authorized medical personnel only.

Operator should be thoroughly familiar with the information in this manual before using instrument. Manuals should be reviewed periodically.

Federal (U.S.A.) law restricts this device to sale by or on the order of a physician.

LIFEPAK 9A defibrillator/monitor should not be used in oxygen-enriched environments or in the presence of flammable agents or anesthetics. These present a possible fire or explosion hazard.

Do not discharge defibrillator with paddles shorted together as it may create shock hazard or damage the instrument.

Do not discharge defibrillator into open air as it may create a shock hazard. Charge energy selector or turn defibrillator "POWER" off to discharge defibrillator internally.

Stay clear of patient when defibrillating. Contact with patient or any electrode presents a potential shock hazard during defibrillation.

Keep defibrillator paddles clean. Paddle handles covered with gel (wet or dry) present a hazardous electrical pathway between the paddle electrode and the user (i.e., shock hazard) during defibrillator discharge.

If the integrity of the grounding system is in doubt, the unit should be operated from internal batteries.

Do not allow water or other fluid to enter the instrument. Spillage into the instrument may damage it and may present a fire or shock hazard.

When not in the diagnostic mode, this product is intended for rhythm interpretation only; it should not be used to evaluate ST segment abnormalities or more elaborate ECG interpretation.
The Physio-Control LIFEPAK® 9A defibrillator/monitor is flexible, compact, and easy to use during resuscitation or routine monitoring. Optional adapters let you tailor the device for use in areas of special need. The defibrillation adapter allows use of internal or external sterilizable paddles, as well as "hands off" defibrillation with FAST-PATCH® disposable defibrillation/ECG electrodes.

The LIFEPAK 9A defibrillator/monitor has special low energy selections, a synchronizer for cardioversion, and an annotating recorder designed for easy paper loading. Pediatric and posterior paddles slip over the standard adult paddles. The integral battery is easy to access and permits continuous operation even in the event of AC power interruption.
Defibrillator/Monitor

1. **(1) ON**
   - Lighted pushbutton for activation of the instrument. (For IEC units, AC power selection is controlled via "MAINS POWER" switch on rear panel.)

2. **CARDIOSCOPE**
   - Non-fade display ECG trace moves from right to left. Alphanumeric information as described below.

3. **LEAD SELECT**

3a. **LEAD SELECT INDICATOR**
   - Alphanumerics on screen indicate lead selected.

4. **ECG SIZE**
   - Control adjusts vertical size of ECG trace on cardioscope and recorder. x1 gain selected automatically at power up. Push ▲ or ▼ to increase or decrease ECG size.
<table>
<thead>
<tr>
<th>4a. ECG SIZE INDICATOR</th>
<th>Alphanumeric on screen indicate actual gain selected from 0.2 cm/mV to 4.0 cm/mV.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. QRS</td>
<td>Display symbol (ε) flashes when QRS is sensed.</td>
</tr>
<tr>
<td>6. HEART RATE</td>
<td>Digital display of QRS rate from 20-360 bpm.</td>
</tr>
<tr>
<td>7. RECORDER</td>
<td>Records ECG and annotation on ECG paper designed for thermal array recorder.</td>
</tr>
<tr>
<td></td>
<td>Prints time, date, ECG lead, ECG gain, heart rate, defibrillation</td>
</tr>
<tr>
<td></td>
<td>or synchronization parameters, and heart rate alarm when violated.</td>
</tr>
<tr>
<td>8. PATIENT CONNECTION</td>
<td>Connector for Physio-Control 3-lead 6-pin patient cable. Use only Physio-Control</td>
</tr>
<tr>
<td></td>
<td>9-10418-02 (AHA) or 800947-01 (IEC) 3-lead cable.</td>
</tr>
<tr>
<td>9. (2) ENERGY SELECT</td>
<td>Pushbutton to select energy levels. Energy levels will appear on right side of</td>
</tr>
<tr>
<td></td>
<td>monitor screen. Two ranges, high and low, are available. The energy level</td>
</tr>
<tr>
<td></td>
<td>selected will be highlighted on the screen. To change selected level, push ▲ or</td>
</tr>
<tr>
<td></td>
<td>▼ to increase or decrease. 200 joules is selected automatically at power up.</td>
</tr>
<tr>
<td></td>
<td>Energy selection range will stay on screen for 10 seconds following the last</td>
</tr>
<tr>
<td></td>
<td>energy level selected or until another button is pushed.</td>
</tr>
<tr>
<td>9a. HIGH RANGE ENERGY SELECT</td>
<td>High range energy display shows &quot;Low, 0, 10, 20,</td>
</tr>
<tr>
<td>9b. LOW RANGE ENERGY SELECT</td>
<td>30, 50, 100, 200, 300, and 360&quot; joules. When in</td>
</tr>
<tr>
<td></td>
<td>high range, selecting the &quot;LOW&quot; setting will cause</td>
</tr>
<tr>
<td></td>
<td>low energy selection range to appear with 9 joule</td>
</tr>
<tr>
<td></td>
<td>setting highlighted. (Note: Selection of 0 joules will inhibit charging of</td>
</tr>
<tr>
<td></td>
<td>defibrillator.)</td>
</tr>
<tr>
<td>9c. &quot;JOULES SELECTED&quot; INDICATOR</td>
<td>Message displayed in lower right corner of screen</td>
</tr>
<tr>
<td></td>
<td>indicating number of joules selected. At power on,</td>
</tr>
<tr>
<td></td>
<td>200 joules is preselected and will remain selected</td>
</tr>
<tr>
<td></td>
<td>until another energy is selected by using &quot;ENERGY SELECT&quot; button.</td>
</tr>
</tbody>
</table>
10. (3) CHARGE

Momentary pushbutton to initiate defibrillator charge cycle. Pushbutton indicator light flashes when unit is charging, glows steadily when selected energy is reached. Charged energy is available for approximately one minute.

10a. "JOULES CHARGING" INDICATOR

Pushing "CHARGE" will cause existing defibrillator status message in lower right corner of screen to change to "JOULES CHARGING" message. Increasing numbers indicate energy level as defibrillator charges.

10b. "JOULES AVAILABLE" INDICATOR

When defibrillator is charged to selected energy, "JOULES CHARGING" message is replaced by a "JOULES AVAILABLE" message accompanied by a charge complete tone. The amount of stored energy will appear in bold numbers above "JOULES AVAILABLE" message.

10c. "CHARGE REMOVED" INDICATOR

"JOULES AVAILABLE" message will revert to "JOULES SELECTED" after approximately one minute, indicating that energy has been dumped. "CHARGE REMOVED" message will appear in upper right corner of screen. Accompanied by audible tone.

If standard or optional paddles become disconnected when unit is charging or charged, energy will be dumped and "CHARGE REMOVED" message will be displayed for 5 seconds or until "CHARGE" is pushed again.

11. "ENERGY FAULT" INDICATOR

If selected energy and stored energy disagree, a flashing "ENERGY FAULT" message will appear in upper right corner of screen, accompanied by an audible tone. This message will remain until energy is transferred or internally dissipated, new energy is selected, or power is turned off. Indicates system malfunction requiring examination by a qualified service representative.

12. SYNC

Pushbutton to select synchronized mode. Pushbutton indicator light will illuminate and flash off whenever QRS is detected. To return to defibrillate (asynchronous) mode, push button again.

13. "SYNC MODE" INDICATOR

Message appears in lower left corner of screen when sync mode is selected. Sync markers (▼) appear on each detected QRS.

**Note:** Defibrillate (asynchronous) mode is automatically selected when defibrillator is powered "ON". Unit automatically returns to defibrillate (asynchronous) mode after each synchronous discharge.
13a. "FOR SYNC: USE LEADS" INDICATOR

Sync mode will not operate in "PADDLES" lead if standard, external sterilizable, or internal paddles are installed. If "PADDLES" is selected, a "FOR SYNC: USE LEADS" message will flash for 3 seconds in lower left corner of screen. Accompanied by 3 short tones. Sync mode will not activate.

If "PADDLES" lead is selected while defibrillator is charging or if charged, energy will be internally dumped and a "CHARGE REMOVED" message will appear in upper right corner of screen.

Exception: If FAST-PATCH disposable defibrillation/ECG electrodes are being used with the optional defibrillation adapter, sync mode will operate in "PADDLES" lead.

14. "BATT CHRG" INDICATOR (yellow)

Lighted message indicates battery is charging and that power source is AC line.

15. "LOW BATTERY: CONNECT AC POWER" INDICATOR

Message appears in lower left corner of screen, accompanied by 3 short tones every 20 seconds. Indicates minimum battery reserve is available and AC power should be connected. Message will blank when AC power connected.

16. "NO PAPER" INDICATOR

Flashing "NO PAPER" message appears in lower left corner of screen accompanied by 3 short tones if: 1) no paper is installed when "RECORD" is pushed, or 2) recorder is running and paper runs out. Recorder will stop.

17. "SERVICE" INDICATOR

Flashing message in lower left corner of screen indicates system malfunction requiring examination by a qualified service representative.
Paddles and storage area

18. STERNUM PADDE 
Defibrillating electrode with one discharge push-button; usually placed to left of sternum (patient's right). Also serves as negative ECG electrode during QUIK-LOOK® paddle monitoring.

19. APEX PADDE 
Defibrillating electrode with QUIK-CHARGE® control ("CHARGE") and second discharge push-button; usually placed near cardiac apex. Also serves as positive ECG electrode during monitoring.

19a. CHARGE (QUIK-CHARGE CONTROL) 
Momentary pushbutton to charge defibrillator from "APEX" paddle. Pushbutton indicator light flashes during charge cycle and glows steadily when energy has reached preselected level.

20. DISCHARGE PUSHBUTTONS 
Pushbuttona to discharge defibrillator. Both buttons must be pushed simultaneously to deliver energy to the paddles. Energy will not be delivered unless unit is fully charged to preselected level.

21. TEST LOAD 
50 ohm defibrillator test load. Metal contacts (under paddles) receive defibrillation pulse from paddles. Test load allows defibrillator testing at 200 joules only.

Successful completion of test is accompanied by "TEST 200 JOULES DELIVERED" message in lower right corner of screen for 5 seconds accompanied by a tone. Recorder will print time, date, defibrillator mode, and "TEST 200 JOULES DELIVERED."

Test failure will cause a "TEST< 200 (or > 200) JOULES DELIVERED" message in lower right corner of screen, "ENERGY FAULT" will flash in upper right corner of screen accomplished by a tone. Recorder will print time, date, defibrillator mode and "TEST < 200 (or > 200) JOULES DELIVERED."

If testing is attempted with energies other than 200 joules, a "TEST USE 200 JOULES" message will be displayed in lower right corner of screen for 5 seconds.

22. PADDLE CABLE CONNECTION 
Connector for Physio-Control standard defibrillator paddles and optional paddle adapters for use with disposable defibrillation/ECG electrodes, external sterilizable paddles and internal paddles.
<table>
<thead>
<tr>
<th>Back Panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>23. QRS VOLUME</td>
</tr>
<tr>
<td>24. 1 mV CAL</td>
</tr>
<tr>
<td>25. TIME/DATE MODE AND SET</td>
</tr>
<tr>
<td>26. MAINS POWER</td>
</tr>
<tr>
<td>Note: On U.S. units, this switch is locked in &quot;ON&quot; or &quot;I&quot; position.</td>
</tr>
<tr>
<td>27. GROUND</td>
</tr>
<tr>
<td>28. POWER CORD</td>
</tr>
</tbody>
</table>
### Defibrillation Adapter

<table>
<thead>
<tr>
<th>29. DISCHARGE PUSHBUTTONS</th>
<th>Pushbuttons to discharge defibrillator. Both buttons must be pushed simultaneously to deliver energy to the paddles. Energy will not be delivered unless unit is fully charged to preselected level.</th>
</tr>
</thead>
<tbody>
<tr>
<td>30. DEFIBRILLATION ADAPTER LOCK</td>
<td>Lever to lock adapter in place. Rotate lever upward to lock, downward to unlock.</td>
</tr>
<tr>
<td>31. CABLE CONNECTOR</td>
<td>Allows use of FAST-PATCH disposable defibrillation/ECG electrodes, external sterilizable paddles, or internal paddles.</td>
</tr>
<tr>
<td>32. DEFIBRILLATION ELECTRODES STORAGE AREA</td>
<td>Slot on right side of adapter holds 1 pair of FAST-PATCH disposable defibrillation/ECG electrodes (PN 004042).</td>
</tr>
<tr>
<td>33. TEST LOAD</td>
<td>50 ohm defibrillator test load. For use with defibrillation electrode cable. Allows defibrillation testing at 200 joules only.</td>
</tr>
</tbody>
</table>
AC AND DC OPERATION

The LIFEPAK 9A defibrillator/monitor may be operated on AC line or DC battery power.

When the defibrillator/monitor is connected to AC line power, the internal battery will charge whether or not the front panel power ("ON") switch is activated. (For IEC units, the rear panel "MAIN POWER" switch must be in "ON" or "I" position.) The "BATT CHG" indicator light will illuminate whenever the battery is charging. A fully depleted battery can be recharged to 90% capacity in 3 hours. A new unit or one that has been stored for a prolonged period of time will require charging. When not in use, the LIFEPAK 9A defibrillator/monitor should be connected to AC line power but turned off to maintain full battery charge.

To operate from the internal battery, disconnect power cord from the AC receptacle. A fully charged battery will typically provide seventy-five (75) 360 joule discharges or approximately two (2) hours continuous monitoring. Minimally, a fully charged battery will provide fifty (50) 360 joule discharges or sixty (60) minutes monitoring with continuous recording. A "LOW BATTERY - CONNECT AC POWER" message will appear in the lower left corner of the monitor display to indicate that a reserve capacity of 10 to 15% is available. The message, accompanied by 3 short tones, will occur every 20 seconds until battery power is exhausted or the unit is connected to line power.

Note: Frequent discharge of the batteries into the minimum reserve capacity will degrade battery life.

The sealed lead-acid battery system used in the LIFEPAK 9A defibrillator/monitor requires no user maintenance and will provide optimal life when the unit is continuously connected to line power. The battery selected for the LIFEPAK 9A defibrillator/monitor works well in cyclic applications, where it is discharged to the low battery warning immediately after receiving a full 16 hour charge. The battery can also provide more than 90% of its capacity after several hours of charging, but should not be used in this mode on an extended basis. A full recharge should be performed after one or two of these short charge cycles to prevent battery degradation.

Although the LIFEPAK 9A defibrillator/monitor battery system was chosen to optimize performance and battery life in a wide range of operating conditions, end of battery life is inevitable. This end of life will be noticed by reduced battery operating time. Batteries that no longer meet operating time specification should be replaced by the following procedure:

- Disconnect line power and turn the unit off.
- Open the battery access door on the bottom of the unit.
- Disconnect the battery harness connector.
- Remove the old battery and replace it with a fresh battery pack.

Batteries should be replaced only with approved batteries from Physio-Control.

MONITORING

Paddle monitoring

ECG monitoring may be done through standard external paddles, sterilizable external paddles, or through FAST-PATCH disposable defibrillation/ECG electrodes.

To monitor through standard or sterilizable external paddles:

- Apply conductive gel to paddles.

Warning: Keep hands and paddle handles free of gel. Failure to do so may create shock hazard.

- Push defibrillator/monitor "ON".

Note: The monitor will power up in one of two leads as described below. The preselected lead (mode) may be selected by a qualified service representative using the "SET UP" mode.

Mode 1: The monitor will preselect "PADDLES" lead whenever it is turned on.
Mode 2: The monitor will preselect Lead II whenever it is turned on.

For information on how to change this mode, see the Operating and Service Manual, or contact your local Physio-Control service representative.

- Push "LEAD SELECT" to "PADDLES" position.
- Place paddles firmly on patient’s bare chest with "APEX" paddle (positive electrode) on patient’s lower left chest and "STERNUM" paddle (negative electrode) near upper sternum on patient’s right.
- Observe cardioscope to determine patient’s rhythm.
Note: "ECG SIZE" may need to be adjusted if QRS complex is not clearly visible on cardi- scope.

To monitor through disposable defibrillation/ECCG electrodes, install the optional defibrillation adapter:

- Remove paddles from paddle wells. Disconnect standard external paddles from defibrillator. (Turn connector lock to the left to unlock.)
- Insert defibrillation adapter into well by first inserting top of adapter, then push bottom of adapter into connector. Lock connector into place by moving connector lock up.
- Connect and lock defibrillation cable to adapter and attach cable to disposable defibrillation/ECCG electrodes.
- Apply disposable defibrillation ECCG electrodes to clean dry skin in the standard defibrillation position. Cable connectors are labelled "APEX" and "STERN" (sternum) for proper positioning to obtain Lead II.
- Proceed as above for paddle monitoring.

Paddle monitoring after defibrillation is usually delayed by a short electrocautery recovery time of several seconds. During this short time span, it may not be possible to determine defibrillation results from the monitor trace.

Patient cable monitoring

The LIFEPAK 9A defibrillator/monitor comes with a 3-lead wire cable (PN 9-10418-02 or for IEC units, PN 800947-01) which is fully shielded to reduce noise to a minimum and allows patient monitoring of Leads I, II and III.

Warning: Use of patient cables other than that listed above may provide less than optimum performance or erroneous ECG data.

To enhance baseline stability and clean trace, the operator should: (1) prepare the patient's skin (clean and dry it) prior to electrode application, (2) make certain that electrodes (whether pre-gelled or not) have sufficient wet gel to conduct, and (3) secure and support the patient cable.

Note:
- Monitoring in the presence of electrocautery or diathermy may cause artifact on the ECG tracing.
- A 50/60 Hz filter may be selected in the "set-up" mode to reduce noise and artifact in certain environments. Selection of the filter may impact performance of the "R" wave detector and 1 mV CAL signal.

Patient cables

Lead wires are color coded according to AHA or IEC standards.
- AHA color coding:
  White - Right arm or "RA" (or upper right chest)
  Black - Left arm or "LA" (or upper left chest)
  Red - Left leg or "LL" (or lower left chest)
- IEC color coding:
  Red - Right arm or "R" (or upper right chest)
  Yellow - Left arm or "L" (or upper left chest)
  Green - Left leg or "F" (or lower left chest)

When electrodes and lead wires are attached as above, Leads I, II and III are obtained by pushing "LEAD SELECT".

When other lead configurations are desired, use the following information as a guide: (If using IEC color coded cable, substitute red, yellow, and green for white, black, and red, respectively).
- When "LEAD SELECT" is set to "I":
  White: negative pick up
  Black: reference
  Red: positive pick up
- When "LEAD SELECT" is set to "II":
  White: negative pick up
  Black: reference
  Red: positive pick up
- When "LEAD SELECT" is set to "III":
  White: reference
  Black: negative pick up
  Red: positive pick up

ECG electrode requirements

For best ECG monitoring results, silver/silver chloride (Ag/AgCl) electrodes such as Physio-Control LIFE PATCH ECG electrode (PN 800139) should be used with this equipment. Post-defibrillation recovery of silver/silver chloride electrodes is much faster than other electrode types. This means that the patient's ECG will be visible on the cardioscope sooner following defibrillation.
Note: Use of stainless steel electrodes should be avoided since post-defibrillation recovery of ECG data may be delayed for 10 seconds or longer. If stainless steel electrodes must be used, it is recommended that careful patient evaluation combined with a more prolonged period of cardioversion observation take place prior to instituting further electric therapy.

QRS detection
QRS detection is essential for use of the digital heart rate display, systole sound ("QRS VOLUME"), and for synchronized cardioversion.

The QRS detector in the LIFEPAK 9A defibrillator/monitor selectively detects QRS complexes greater than one centimeter in height on the cardiogram. It discriminates against noise, muscle artifact, "T" waves, and other random signals.

Detection of QRS complexes and rejection of other signals is dependent on proper setting of the "ECG SIZE" control (see ECG Monitoring Procedure). If "ECG SIZE" is set too low, QRS complexes will not be detected; no systole sound or synchronizer marker will appear and heart rate display will be incorrect. If "ECG SIZE" is set excessively high, signals other than QRS complexes may be detected; systole sound and synchronizer marker may occur on signals other than QRS complexes and heart rate display may be incorrect.

Monitoring pacemakers
The LIFEPAK 9A monitor will detect pacing stimuli produced by permanent or transvenous internal pacemakers. The QRS detection circuitry will not use the pacing stimuli for heart rate calculation or synchronization. Large amplitude pacemaker spikes can overload the QRS detector circuitry so that no paced QRS complexes are counted resulting in blanking of the heart rate display. To minimize ECG pickup of the pacemaker impulse when monitoring unipolar pacemakers, the following may be helpful:

- Place the electrodes so that a straight line drawn between the positive and negative electrodes intersects a line between the pacemaker generator and the heart at right angles. Electrode placement will not be as critical when the pacemaker is bipolar.
- When monitoring patients with noninvasive (external transcutaneous) pacers, it may not always be possible to display an accurate heart rate; therefore, do not rely upon the heart rate display or heart rate alarms. Direct observation of patient is essential.

ECG monitoring procedure
- Attach 6-pin patient cable to ECG receptacle on front panel.
- Prepare patient's skin for electrode application (clean and dry sites).
- Attach lead wires to electrodes.
- Apply electrodes to prepared sites. (Make certain the gel of pre-gelled electrodes has not dried. If using non-pre-gelled type, apply 1/4"-1/2" gel in mounds over contact.)
- Push defibrillator/monitor "ON". Push "button indicator light and cardiogram will illuminate.
- Select proper lead with "LEAD SELECT".
- Adjust "ECG SIZE" if necessary. Size is automatically set to x1 gain at power up. To properly count heart rate during routine monitoring and to accurately detect "R" waves during synchronized cardioversion, the "ECG SIZE" must be adjusted correctly (see page 12).
- Push "ECG SIZE" ▲ or ▼ until QRS beeper and flashing QRS symbol (♥) in upper left corner of monitor screen coincide with every "R" wave.
**PAPER LOADING**

- Pull out top of recorder; recorder will open for paper insertion.
- Remove old paper roll.
- Insert new paper roll as illustrated. Paper must be wound with grid facing inside of roll.
- Pull out a short length of paper.
- Close recorder, case. Push bottom recorder door up and in and push top recorder door down.
- Push "RECORD" to print.

**Note:** To avoid fading or disappearance of annotation and ECG tracings, follow these guidelines for thermal sensitive papers.
- Do not apply tape or other adhesives over annotation or ECG tracing.
- Adhesives may be applied to the back of the paper.
- Store only in paper folders; do not store in the same file compartment with plastics.
- Avoid extended exposure to sunlight.
- Avoid temperatures in excess of 80°F and relative humidity over 70 percent.

**Recording procedure**

Receivers may be used during paddle monitoring as well as cable monitoring. The thermal array annotating receiver prints the time, date, ECG lead, ECG gain, heart rate and defibrillation or cardioversion parameters.
- Push "RECORD" to activate receiver. Push again to stop receiver.
- Receiver operates in an 8-second delayed ECG mode.
- Adjust "ECG SIZE" if necessary.
- The beginning of each annotation will be marked with an arrow (↑).
- When the receiver is on, annotated information will be updated every 20 seconds and when a new lead is selected, or defibrillation is performed. Information annotated during defibrillation will also include joules selected and defibrillation mode (defibrillation or synchronized cardioversion).
- A flashing "NO PAPER" message appears in lower left corner of screen accompanied by 3 short tones if 1) no paper is installed when "RECORD" is pushed, or 2) recorder is running and paper runs out. Recorder will stop. Install paper as instructed.

**Caution:** For thermal array recorders use thermal sensitive paper, such as Physio-Control paper (P/N 804700). Do not use waxed paper. Incorrect paper may damage the recorder.
DEFIBRILLATION

It is important that defibrillation is carried out with as little delay as possible. Paddle position is crucial. The standard paddle placement (anterior-anterior) locates one paddle at the right of the upper sternum (patient's right) just below the clavicle, and the second paddle just to the left of the nipple in the anterior auxiliary line (patient's lower left chest).  

ECG gel, paste, or defibrillation gel pads may be used for the conductive interface.

Warning: (shock hazard)
- Do not allow this material to become continuous between the paddle sites or to reach the handles, since the current will follow this alternate path and conduct across the chest wall or to the handles, rather than entering the chest cavity. Firmly pressing the paddles against the chest wall (25 lbs. pressure per paddle) helps deliver the energy to the thorax.
- Operator and other members of the resuscitation team should stand clear of the patient and bed during actual defibrillation.
- Clean paddles after use to help prevent operator shock. (See Maintenance.)

Defibrillation procedure
- Apply conductive gel to paddles.
- Turn defibrillator power on by pushing 1 "ON" button. Button indicator light will illuminate. "200 JOULES SELECTED" will appear in lower right corner of screen.
- If 200 joules is the desired energy, the defibrillator is immediately ready to be charged. If another energy level is desired, push 2 "ENERGY SELECT" and select energy to be delivered.

Note: Energy is limited to 50 joules if internal paddles are connected.

- Push 3 "CHARGE" button on defibrillator front panel or on apex paddle. Indicator lights on "CHARGE" button and apex paddle will flash while unit is charging. A "JOULES CHARGING" message will appear in lower right corner of monitor screen. Increasing numbers indicate energy level as the defibrillator charges.

- Place defibrillator paddles firmly on patient's chest. "STERNUM" paddle is generally placed near the upper sternum and slightly toward the patient's right shoulder. "APEX" paddle is placed near the cardiac apex or on patient's lower left chest.
- When the defibrillator is ready, "JOULES CHARGING" will be replaced by the energy selected and a "JOULES AVAILABLE" message. A charge complete tone will be heard. "CHARGE" button indicator will glow steadily. Chosen energy is available for approximately one minute.

The defibrillator will not discharge while "CHARGE" button indicator light is flashing and numbers are scrolling up. Recharge defibrillator if energy is required after "JOULES AVAILABLE" message is removed.
- Discharge defibrillator by pushing both paddle discharge buttons simultaneously.
- Observe patient and cardioscope to determine results. If repeat countershock is necessary, select energy, push 3 "CHARGE" and repeat as above.
- To dump an unwanted charge, push "ENERGY SELECT" or turn off defibrillator power. A "CHARGE REMOVED" message will appear in upper right corner of screen for 5 seconds or until "CHARGE" is pushed again.


Note. If "ENERGY SELECT" is changed after charge is initiated, energy will be discharged internally. A "CHARGE REMOVED" message will appear in upper right corner of screen for 5 seconds or until the "CHARGE" button is pushed again. The operator must re-initiate charge by pushing 3 "CHARGE".
**Note:** If standard or optional paddles become disconnected when unit is charging or charged, energy will be dumped and the "CHARGE REMOVED" message will be displayed for 5 seconds or until paddles are reconnected and "CHARGE" button is pushed again.

**Warning:**
- Do not discharge defibrillator paddles into open air or shorted together. This may damage the unit and may create a shock hazard.
- To turn off defibrillator, push "ON" again. Pushbutton indicator light will go out.
- Thoroughly clean defibrillator paddles and store them in test load (storage) area.

**Posterior clip-on paddle**
Use of the posterior clip-on paddle does not require use of the optional defibrillation adapter.
- Slide posterior paddle over clean APEX paddle as shown. An audible click will occur when fully engaged.
- Apply gel to posterior paddle surface and place in posterior position.
- Apply gel to STERNUM paddle and place in anterior position.
- Charge and discharge using usual controls.

**Use of alternate paddles**
Pediatric and posterior paddles slide directly over the standard adult paddles. FAST-PATCH disposable defibrillation/ECG electrodes, sterilizable external paddles, or internal paddles may be used with the LIFEPAK 9A defibrillator/monitor with the optional defibrillation adapter. The defibrillation adapter fits into the paddle well after the standard defibrillator paddles are removed.

**Disposable defibrillation/ECG electrodes**
Use of FAST-PATCH disposable defibrillation/ECG electrodes requires the optional defibrillation adapter. One set of electrodes can be stored in the slot on right side of adapter.

FAST-PATCH disposable defibrillation/ECG electrodes provide clinicians with a fast, easy alternative to standard paddle defibrillation. The electrodes also allow monitoring in Lead II and quickly restore ECG on the monitor after defibrillation.

**Pediatric clip-on paddles**
Use of the pediatric clip-on paddles does not require the optional defibrillation adapter.
The electrode has a dry self-adhesive gel and a flexible, low profile backing material that contours to the patient.

One electrode set will withstand up to fifty 400 joule shocks and can remain on a patient for 24 hours. The electrodes are radioolucent (except for the connection post).

FAST-PATCH electrodes are shipped with 18 to 24 months shelf-life remaining.

**Note:** The use of defibrillation electrodes and adapter devices from sources other than Physio-Control is not recommended. Physio-Control has no information regarding the performance or effectiveness of its LIFEPAK defibrillators if they are used in conjunction with defibrillation electrodes from other sources. If device failure is attributable to defibrillation electrodes not manufactured by Physio-Control, this may void warranty.

**Procedure**
- Remove paddles from paddle well. Disconnect standard external defibrillator paddles from defibrillator. (Turn connector lock in the left to unlock.)
- Insert defibrillation adapter into well by first inserting top of adapter then by pushing bottom of adapter into connector. Lock connector in place by moving connector lock up.
- Connect and lock defibrillation cable to adapter.
- Attach the defibrillation cable to FAST-PATCH electrodes by snapping the cable onto electrode posts. Peel off protective liner from electrodes. Peel liner slowly to prevent damage to self-adhesive gel.

**Note:** Poor adhesion may result if patient has excessive chest hair. Shave or clip hair in electrode placement areas.

- Apply electrodes to clean dry skin in the standard apex-sternum position. Make sure each electrode adheres around its edge. Cable connectors are labeled “APEX” and “STERN” (sternum) for proper positioning to obtain Lead II when monitoring in “PADDLES” mode.

**Note:** If anterior/posterior defibrillation is desired, place the “APEX” electrode posteriorly and the “STERN” (sternum) electrode anteriorly. For patient comfort, orient the posterior cable/post connection away from the spine. Monitoring in “PADDLES” mode will not provide an accurate ECG signal if anterior/posterior placement is used. ECG signal must be via patient ECG cable with a lead selected.

**Note:** Do not apply FAST-PATCH electrodes in the anterior-posterior position when used with LIFEPAK 200 automatic advisory defibrillator.

- Proceed as per defibrillation instructions.
- Push both discharge buttons on paddles adapter simultaneously to discharge.
- To remove electrodes, slowly peel from patient’s skin.

**Warnings**
- Use FAST-PATCH electrodes with Physio-Control LIFEPAK defibrillators only. Effectiveness may be reduced with other defibrillators.
- Do not use any conductive paste, gel or pads with FAST-PATCH electrodes. FAST-PATCH electrodes are pre-gelled.
- Do not discharge standard paddles on FAST-PATCH electrodes.
- Do not immerse FAST-PATCH electrodes in water or other fluid.
- Do not use alcohol or other solvents on the electrodes. Do not autoclave or gas sterilize the electrodes.
- Do not use FAST-PATCH electrodes if gel is torn, separated or split from the foil, as this may cause patient burns.

**Transfer between LIFEPAK defibrillators**
If patient care is transferred between LIFEPAK defibrillators that use FAST-PATCH electrodes, keep the electrodes on the patient. To disconnect the cable from the electrode:
- Press down on the electrode area around the post with one hand to stabilize.
- Grasp the connector with the other hand and pull straight up. It is important to support the area around the post while the connector is pressed into place.
- Repeat steps 1 and 2 to remove cable from other electrode.
- Snap connectors of the follow-on cable onto the posts. For some patients, it may be necessary to place one or two fingers directly beneath the post for support while the connector is pressed into place.
- To remove electrodes, slowly peel from patient’s skin.
External sterilizable paddles
Use of external sterilizable paddles requires the optional defibrillation adapter.
  • Remove paddles from well. Disconnect standard external paddles from defibrillator. (Turn connector lock to left to unlock.)
  • Insert defibrillation adapter into well by first inserting top of adapter, then push bottom of adapter into connector. Lock connector into place by moving connector lock up.
  • Attach and lock sterilizable external paddle cable to adapter.
  • Proceed as per defibrillation instructions.
  • Push both discharge buttons on defibrillation adapter simultaneously when directed to do so by person holding paddles on patient’s chest.

Procedure for internal defibrillation
Use of internal paddles requires the optional defibrillation adapter. Energy selection and delivery is limited to 50 joules or less when paddles are connected. Current literature indicates that 90% of adult human hearts can be defibrillated with 10J or less delivered directly to the heart.
  • Remove paddles from paddle well. Disconnect standard paddles from defibrillator. (Turn connector lock to left to unlock.)
  • Insert defibrillation adapter into well by first inserting top of adapter, then pushing bottom of adapter into connector. Lock connector in place by moving connector lock up.
  • Connect and lock internal handles connector to adapter. (Sterility of connector will be compromised.)
  • Attach sterile paddles to handles using sterile technique.
  • Push defibrillator 1 “ON”.
  • Push 2 “ENERGY SELECT” △ or ○ to select energy. Select “HIGH” energy range for 0, 10, 20, 30, or 50 joules. Select “LOW” energy range for 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 joules.
  • Place paddles over right atrium and left ventricle. Push 3 “CHARGE”.
  • Push both buttons on adapter simultaneously when directed to do so by person holding paddles on patient’s chest.
Synchronized Cardioversion

- Push 1 "ON".

There are two ways to monitor ECG for synchronized cardioversion.
1. Use the patient ECG cable and select Lead I, II or III. Electrodes should be placed away from paddle sites and such that resultant lead will give a tall QRS (may be positive or negative).
2. Use the optional defibrillation adapter and FAST-PATCH disposable defibrillation/ECG electrodes and select "PADDLES" lead.

Note: Sync mode will not operate in "PADDLES" lead if standard, external sterilizable or internal paddles are installed. A "FOR SYNC: USE LEADS" message will flash in lower left corner of screen, accompanied by 3 short tones. Sync mode will not activate.

Synchronized cardioversion energy may be delivered by any of the alternate paddles or by the disposable defibrillation/ECG electrodes.
- If using standard paddles, apply conductive gel to paddles.
- Select energy to be delivered with "ENERGY SELECT".
- Push "SYNC" button. The "SYNC" button indicator light will illuminate and the SYNC MODE message will appear in the lower left corner of the monitor screen.

For proper synchronization, "ECG SIZE" must be adjusted correctly.
- Observe oscilloscope. Sync markers (▼) should occur within each QRS complex. If they do not appear or appear elsewhere on the ECG signal, adjust "ECG SIZE" ▲ or ▼ until markers occur within each QRS complex. If this is not successful, select another lead or move the ECG electrodes. "SYNC" button indicator light will blink off with each detected QRS.

Sync markers indicate the time of QRS detection which is used to synchronize the discharge of the defibrillator. Markers may appear to move slightly from complex to complex. This is normal.

Occasionally, sync markers may occur near the end of the QRS complex. Sometimes, adjusting "ECG SIZE" to minimum, then adjusting upward will move the marker closer to the middle of the QRS.
- If using standard paddles, place paddles on patient's chest as described under defibrillation procedure.
- Push 3 "CHARGE" to charge defibrillator. Defibrillator is ready when the energy selected and the "JOULES AVAILABLE" message appears in lower right corner of screen. "CHARGE" button indicator light will glow steadily and a charge complete tone will be heard.
- Push and hold pushbuttons on paddles (or on defibrillation adapter if using FAST PATCH disposable defibrillation electrodes) until discharge occurs with next detected QRS complex. Release.
- If rhythm does not convert and cardioversion is to be reattempted, push "SYNC" button again (message will illuminate) since unit switches back to defibrillate mode automatically after each synchronous discharge.
- Thoroughly clean and store paddles in test load (storage) area.
TESTING THE LIFEPAK 9A DEFIBRILLATOR/MONITOR

The LIFEPAK 9A defibrillator/monitor should be routinely tested to detect possible electrical and mechanical problems and to keep personnel acquainted with normal operating procedure. Contact qualified service representative if discrepancies are noted.

- For IEC units, "AC MAINS" should be in "ON" or "I" position.
- Disconnect AC line power.
- Push defibrillator/monitor power "ON". All LED's (pushbutton indicator lights) should light briefly.

Monitor/Recorder function
- Connect power cord to grounded AC receptacle. "BATT CHG" indicator light should illuminate.
- Push lead select to "STD" position.
- Attach patient cable to monitor. Do not connect cable to patient or simulator.
- Push and release rear panel "CAL" button. Calibration wave should appear on oscilloscope.
- Adjust rear panel "QRS VOLUME" so that sound is heard with each calibration signal.
- Push "LEAD SELECT" to Lead I. Interference should be present on oscilloscope. Place snap ends of white lead wire and black lead wire together; trace on oscilloscope should stabilize. Repeat process for Lead II using white lead wire and red lead wire; for Lead III using black and red.
- Push "LEAD SELECT" to "STD".
- Push "RECORD". Recorder should run and trace should appear within one second. Push rear panel "CAL" several times. Calibration signal should appear on scope and be recorded on ECG paper approximately 8 seconds later. Signal recorded should match figure below.

Caution: For thermal array recorders use thermal sensitive paper such as Physio-Control paper (P/N 804700). Do not use waxed paper.

Note: To avoid fading or disappearance of annotation and ECG tracings, follow these guidelines for thermal sensitive papers.
- Do not apply tape or other adhesives over annotation or ECG tracing.
- Adhesives may be applied to the back of the paper.
- Store only in paper folders; do not store in the same file compartment with plastics.
- Avoid extended exposure to sunlight.
- Avoid temperatures in excess of 80°F and relative humidity over 70 percent.

Defibrillator function
- Paddles should be firmly seated in test load (storage) area.
- Push 2 "ENERGY SELECT". Select 200 joules if not already selected.
- Push 3 "CHARGE". "JOULES CHARGING" will appear in lower right corner of monitor screen. Increasing numbers indicate energy level as defibrillator charges. Defibrillator is ready when the selected energy and the "JOULES AVAILABLE" messages appear in the lower right corner of monitor screen. "CHARGE" button indicator light will glow steadily and a charge complete tone will be heard. Charge cycle should take 10 seconds or less.
- Push the apex discharge button only and verify that the unit does not discharge.
- Push the sternum discharge button only and verify that the unit does not discharge.
- Discharge defibrillator by pushing both paddle discharge buttons simultaneously.

The message "TEST 200 JOULES DELIVERED" will appear in the lower right corner of screen for 3 seconds. Recorder will print time, date and "DEFIB TEST 200 JOULES DELIVERED".

Caution: Because of heat created as a result of discharge into test load, do not repeat testing of defibrillator more often than 10 times per hour. Do not discharge with paddles in "open air". Do not dump energy by changing "ENERGY SELECT" or turn off power to discharge energy more than 4 times per minute.

• Push "RECORD" again to turn recorder off.
Monitor and defibrillator function
- Push "LEAD SELECT" to select "PAULDS" lead. Touch one paddle face. Cardioscope should show interference. Repeat with second paddle.
- Place paddle electrodes together. Interference should disappear on cardioscope.
- To test synchronizer:
  - Connect monitor to ECG simulator via patient cable.
  - Observe cardioscope. Select lead with tall QRS. (May be positive or negative).
  - Push "SYNC" button. "SYNC MODE" message will appear in lower left corner of monitor screen. Adjust "ECG SIZE" to minimum position and advance slowly until marker appears within each QRS complex. "SYNC" button indicator light will blink off with each detected QRS.
  - Leave paddles in storage area. Select 200 joules by pushing 2 "ENERGY SELECT".
  - Charge defibrillator.
  - Push and hold both paddle discharge buttons simultaneously until defibrillator discharges on next detected QRS.
  - Defibrillator should return to defibrillate mode ("SYNC MODE" message no longer appears in lower left corner of monitor screen). The message "TEST 200 JOULES DELIVERED" will appear in the lower right corner of screen for 3 seconds. Recorder will print time, date, and "SYNC TEST 200 JOULES DELIVERED".
- Test failure will cause a "TEST < 200 (or > 200) JOULES DELIVERED" message to appear in lower right corner of monitor screen. "ENERGY GAULT" will appear in upper right corner of screen. Recorder will print time, date, and "TEST < 200 (or > 200) JOULES DELIVERED".

Optional defibrillation adapter function
- Remove standard paddles.
- Insert defibrillation adapter, locking connector in place.
- Connect defibrillation cable for use with FAST-PATCH disposable defibrillation/ECG electrodes to paddles adapter.
- Connect cable ends to test load contacts.

Select 200 joules by pushing 2 "ENERGY SELECT".
- Charge defibrillator.
- Push the left adapter discharge button only and verify that the unit does not discharge.
- Push the right adapter discharge button only and verify that the unit does not discharge.
- Discharge defibrillator by pushing both defibrillation adapter discharge buttons simultaneously.

The message "TEST 200 JOULES DELIVERED" will appear in lower right corner of screen for 3 seconds. Recorder will print time, date, and "DEFIB TEST 200 JOULES DELIVERED".
- Test failure will cause a "TEST < 200 (or > 200) JOULES DELIVERED" message to appear in lower right corner of screen. "ENERGY FAULT" will appear in upper right corner of screen. Recorder will print time, date, and "TEST < 200 (or > 200) JOULES DELIVERED".

SETTING THE CLOCK
- Push power "ON".
- Push rear panel TIME/DATA "MODE" button. Day, month, year, hours, and minutes will be displayed in the lower left corner of monitor screen. The single minutes field will be highlighted.
- Push rear panel TIME/DATA "SET" button to change the single minute setting. Each button push increases the value of the field by one increment. When the maximum value for a field is reached, the display rolls over to the lowest value for that field.
- Push "MODE" again to change the highlighted field. Push "SET" to scroll through selectable values.
- Repeat this process to adjust year, month and day.
- Push "MODE" again to remove clock setting display from the screen.

Note: If any front panel button is pushed or the unit is turned off while setting the clock, the clock set mode will be terminated without implementing any changes.
The LIFEPAK 9A defibrillator/monitor, paddles, cables, test load contacts, cardioscope screen, and optional defibrillation adapter should be cleaned with mild soap and water. Use a damp sponge or towel to clean.

**Warning:** Shock hazard.

Do not immerse the LIFEPAK 9A defibrillator/monitor or defibrillation adapter in water. Do not use alcohol or ketones (MEK, acetone, etc.).

**Warning:** Special care should be taken to clean the defibrillator paddles after each use. Build-up of gel will not only interfere with ECG pick-up through the paddles (artifact will be evident), but could produce a shock hazard to the operator if dried (or wet) gel accumulates between the paddle surfaces and the operator handles. Clean paddle storage area anytime it becomes soiled with gel.

Do not autoclave the LIFEPAK 9A defibrillator/monitor or any Physio-Control defibrillator paddles except internal paddle spoons (paddles must be separated from handles). Internal paddle spoons will tolerate short-term autoclaving up to 290°F and long-term autoclaving up to 260°F.

Do not gas sterilize the LIFEPAK 9A defibrillator/monitor or defibrillation adapter.

Internal paddle handles and cables may be gas sterilized and will tolerate temperatures to 150°F.

**Note:** After every ten (10) sterilization cycles, all connectors should be visually inspected for signs of corrosion or damage. A defibrillator tester should be used to verify that the delivered energy is within product specifications outlined in the Service Manual.

Product life is impacted by sterilization rather than age. Spoons and handles which are subjected to repeated sterilization may require more frequent replacement.

Clip-on posterior and pediatric paddles and sterilizable external paddles without discharge switches may be gas sterilized at temperatures up to 150°F. Gas sterilization of paddles must be in accordance with procedures accepted by the Joint Commission on Accreditation of Hospitals and as recommended by the gas sterilization equipment manufacturer.
**TROUBLESHOOTING**

This brief checklist is intended for nontechnical personnel. If trouble persists after consulting this guide, call your qualified service technician.

### Monitor

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
</tr>
</thead>
</table>
| 1. Unit does not function when "ON" is pushed. No trace on cardioscope. "ON" button does not light. | 1A. Battery powered (DC): Power cord disconnected (or in IEC units, "MAINS POWER" switch on rear panel in "OFF" or "O" position). (1) Battery discharged below operating level. Test by using line power.  
  1B. Line operation (IEC units: "MAINS POWER" in "ON" or "I" position). (1) Unit not plugged in. (2) Failed power cord. (3) Blown fuse or tripped circuit breaker in building. |
| 2. Interference on cardioscope when using patient cable as ECG pick-up. | 2A. Patient cable not connected to unit.  
  2B. Poor skin preparation, electrode contact, electrode placement, or outdated electrodes.  
  2C. Failed or incorrect patient cable.  
  2D. Strong radio frequency electrical field present in area (such as diathermy). Turn other equipment off. |
| 3. Excessive interference or 60 cycle interference on cardioscope when using paddles for ECG pick-up. | 3A. Paddles dirty.  
  3B. "LEAD SELECT" not set to "PADDLES".  
  3C. If using FAST-PATCH disposable defibrillation/ECG electrodes, poor skin preparation, electrode contact, electrode placement, or outdated electrodes. |
| 4. No ECG signal on cardioscope when using patient cable. | 4A. "LEAD SELECT" set to "STD" or "PADDLES".  
  4B. Failed patient cable.  
  4C. Active electrodes positioned together. |
| 5. No ECG signal on cardioscope with QUIK-LOOK paddle monitoring. | 5A. "LEAD SELECT" not in "PADDLES" position. |
| 6. Recorder does not run. | 6A. Power not on.  
  6B. If operating from internal battery, try AC line power.  
  6C. Recorder out of paper. |
| 7. Straight line on cardioscope and recorder when signal is applied or "1 mV CAL" is pushed. | 7A. "ECG SIZE" set too low. |
| 8. No systole sound. | 8A. "QRS VOL" set to inaudible.  
  8B. "ECG SIZE" adjusted too low.  
  8C. Amplitude of ECG signal too low in that lead. Select another lead or move electrodes. |
| 9. No "SYNC" marker on cardioscope. | 9A. Unit not in synchronous mode.  
  9B. "ECG SIZE" adjusted too low.  
  9C. Amplitude of ECG signal too low in that lead. Select another lead or move electrodes. |
| 10. "QRS" indicator ( ) fails to flash with each QRS. | 10A. "ECG SIZE" adjusted too low.  
  10B. Amplitude of ECG signal too low in that lead. Select another lead or move electrodes. |
<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
</tr>
</thead>
</table>
| 11. Heart rate does not register. | 11A. "ECG SIZE" adjusted too low.  
11B. Amplitude of ECG signal too low in that lead. Select another lead or move electrodes. |
| 12. "LOW BATTERY: CONNECT AC POWER" message remains lit despite charging attempts. Unit operates normally on line power (AC). | 12A. Call a qualified service representative. |
| 13. "BATT CHARGE" indicator fails to light when unit connected to AC line power. Unit otherwise operational. | 13A. Light failed.  
13B. Power cord failed or not connected.  
13C. Building fuse blown or circuit breaker tripped. Unit operating from internal battery.  
13D. Battery not charging properly.  
13E. No battery installed.  
13F. For IEC units, "MAINS POWER" switch on rear panel in "OFF" or "O" position. |
| 14. ECG recording appears smudged. | 14A. Incorrect ECG paper inserted. Use paper for thermal array recorders such as Physio-Control chemical paper (P/N 804700). |
| 15. "SERVICE" message appears in lower left corner of screen. | 15A. Call a qualified service representative. |
| 16. Time or date on recorder incorrect. | 16A. Time or date not set properly. Adjust using "TIME/DATE MODE" and "SET" controls on rear panel (see page 21).  
16B. Clock battery requires replacement. |
| 17. Indicator lights momentarily flash. | 17A. The LIFEPAK 9A defibrillator/monitor has a self-test feature which includes lamp tests. This function may occur during normal operation and is represented by momentary flashing of indicator lights. |

**Defibrillator**

| 1. Charge time to 360 joules exceeds 10 seconds. | 1A. Battery powered (DC): battery level low.  
1B. AC line powered: battery not installed or battery depleted. |
| 2. Numbers in "JOULES CHARGING" message scroll very slowly when "CHARGE" pushed. | 2A. Internal battery level low. Connect to line power. |
| 3. Energy is not delivered to patient when both paddle or Defibrillation Adapter pushbuttons are pressed simultaneously. | 3A. Unit in "SYNC" mode but no QRS detected.  
3B. Defibrillator has not reached full energy selected.  
3C. More than approximately one minute has elapsed and energy is no longer available for discharge, (paddle "CHARGE" button indicator lit).  
3D. Charge has been "dumped" due to charged "ENERGY SELECT" after charge initiated. (No indicators lit).  
3E. Defibrillator adapter not connected.  
3F. Paddles or defibrillation electrode cable not connected. |
<p>| 4. Displayed &quot;JOULES AVAILABLE&quot; does not match energy selected. Accompanied by &quot;ENERGY FAULT&quot; message. | 4A. Defibrillator energy storage may not meet specifications. Call a qualified service representative. |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>&quot;JOULES CHARGING&quot; message does not appear when &quot;CHARGE&quot; pushed.</td>
</tr>
<tr>
<td>6.</td>
<td>Message &quot;TEST &lt; 200 (or &gt; 200) JOULES DELIVERED&quot; displayed when 200J selected and dumped into Test Load. Accompanied by &quot;ENERGY FAULT&quot; message and warning tone.</td>
</tr>
<tr>
<td>7.</td>
<td>&quot;SYNC MODE&quot; message does not appear when &quot;SYNC&quot; mode is selected.</td>
</tr>
<tr>
<td>8.</td>
<td>(When using defibrillation adapter) No test load display messages appear when a defibrillation electrode cable test load is performed.</td>
</tr>
</tbody>
</table>
### SPECIFICATIONS

**DEFIBRILLATOR/MONITOR**

**INPUT**
- Isolated ECG via QUIK-LOOK defibrillator paddles, FAST-PATCH disposable defibrillation/ECG electrodes, or 3-lead patient cable; 6-pin patient cable connector per AAMI ECG Connector Standard ECGC 5/83.

**PATIENT CABLE LENGTH**
- 4.0 m (13 ft); cable 3.1 m (10 ft), leads 0.9 m (3 ft).

**COMMON MODE REJECTION**
- 100 dB minimum with respect to chassis ground at 60 Hz. 65 dB minimum with respect to isolated ground. Common mode range for patient cable input ± 10 volts peak with respect to isolated ground.

**CARDIOSCOPE DISPLAY**
- **Size:** 76 mm (3 in) x 102 mm (4 in), non-fade.
- **Sweep Speed:** 25 ± 1 mm/sec..
- **Frequency Response (-3 dB):** 0.3 Hz to 40 Hz.

**RECORDING TYPE**
- Thermal array.

**RECORDING DISPLAY**
- **Paper Size:** 50 mm x 30 m (100 ft).
- **Paper Speed:** 25 ± 1 mm/sec..
- **Recorder Mode:** Delayed by approximately 8 seconds.
- **Frequency Response (-3 dB):** 1 Hz to 40 Hz (.05 Hz to 100 Hz option through "SET UP" mode).
- **Annotation:** Includes time, date, ECG lead, ECG gain, heart rate and defibrillation parameters.

**HEART RATE METER**
- 3 digit readout displays rates from 20 to 300 beats/min.

**CALIBRATION**
- Momentary pushbutton switch on rear panel simulates 1 millivolt signal to preamplifier.

**AC INPUT OPTIONS**
- Nominally 120 VAC (90 VAC minimum, 129 VAC maximum) or 240 VAC (198 VAC minimum, 264 VAC maximum); 50 or 60 Hz.
- Unit is compatible with all specified inputs without modification.

**BATTERY TYPE**
- Sealed lead acid; 3 Ah; 16v nominal.

**BATTERY CAPACITY**
- Typically: Seventy-five (75) 360 joule discharges or approximately 2 hours continuous monitoring with a fully charged battery.
- Minimally: Fifty (50) 360 joule discharges or sixty (60) minutes monitoring with continuous recording with a fully charged battery.

**LOW BATTERY INDICATOR**
- Indicates low voltage level of battery; approximately 15% operating reserve capacity remains.

**BATTERY CHARGING INDICATOR**
- Illuminates when battery is charging.

**BATTERY CHARGE TIME**
- 3 hours to 90% capacity; 16 hours to full capacity.
SERVICE INDICATOR

Indicates continuous self-diagnostic routines have detected improper operation requiring service attention.

MAXIMUM POWER CONSUMPTION

30 watts while monitoring, 50 watts while monitoring with recorder on, 150 watts while monitoring with recorder on and defibrillator charging or charging a fully depleted battery.

SIZE

35.3 cm H x 29.7 cm W x 31.0 cm D
(13.9 in H x 11.7 in W x 12.2 in D)

WEIGHT

12.7 Kg (28.0 lb)

DEFIBRILLATION WAVEFORM

5 millisecond monophasic pulse (Edmark) per AAMI Standard

OUTPUT ENERGY (delivered):
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 50, 100, 150, 200, 300, 360 joules. Internal paddles 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 50, joules. Defibrillator output electrically isolated.
25 ohms (30%) 50 ohms (15%) 100 ohms (30%)
4 5 5
9 10 11
17 20 22
26 30 33
43 50 55
66 100 109
171 200 218
257 300 327
309 360 393
ACCESSORIES AND REPLACEMENT ITEMS

OPTIONAL ADAPTER

803747-00
Defibrillation Adapter. Required for use with FAST-PATCH disposable defibrillation electrodes/ECG electrodes, external sterilizable paddles, or internal paddles. Completes with operating instructions, defibrillation electrode cable (804089-08), and one set FAST PATCH disposable defibrillation/ECG electrodes.

OPTIONAL PADDLES

FAST-PATCH disposable defibrillation/ECG electrodes. For use with defibrillation adapter (803747) and defibrillation electrode cable (804089-13).

804545-001
1 set (2 electrodes)

804545-010
10 sets (20 electrodes)

804545-050
50 sets (100 electrodes)

804507-01
External sterilizable paddles and connector. For use with defibrillation adapter (803747).

800441-03
Handles and connector for internal paddles. For use with defibrillation adapter (803747).

Internal paddles.
For use with handles and connector 800441-03.

802154-10
2.5 cm (1.0 in) diameter, pair

802154-11
3.8 cm (1.5 in) diameter, pair

802154-12
5.1 cm (2.0 in) diameter, pair

802154-13
6.4 cm (2.5 in) diameter, pair

802154-14
8.9 cm (3.5 in) diameter, pair

Handles and Connector

Internal Paddles

803418-00
Pediatric paddle, external 1 each (2 required). Slips on to standard adult, QUIK-LOOK, QUIK-CHARGE paddles, or external sterilizable paddles.

802461-00
Posterior paddle, external adult. Slips on to standard adult, apex QUIK-LOOK, QUIK-CHARGE paddle, or external sterilizable paddles.

ACCESSORIES

804089-13
Defibrillation electrode cable. For use with FAST-PATCH disposable defibrillation/ECG electrodes.

9-10418-02
Patient cable, 3-lead, I, II, III. 6-pin connector, snap type, low noise

800539-02
Emergency cart. Flip-up workshelf, with 3 drawers, swivel castors, tubular top railings, cardiac board, IV pole, and "lock" system.

200349-001
Red security ties for emergency cart, 50 ties/package
REPLACEMENT ITEMS

800139-030
LIFE•PATCH ECG electrodes, adult
Box of 30 electrodes (3 electrodes per package; 10 packages per box)

800139-300
Case of 300 electrodes (10 boxes/case)

9-10236-00
DERMA JEL® electrode gel
4 oz. tube

9-10236-012
Twelve tubes/case

804700-003
ECG paper, chemical, 50 mm x 30 m (100 ft), 40 mm grid
3 rolls/box (1 box)

804700-150
50 boxes/case (150 rolls)

803619-08
Power cord

805383-00
Operating instructions for LIFEPAK 9A defibrillator/monitor and defibrillation adapter

803763-00
Service manual for LIFEPAK 9A defibrillator/monitor
Physio-Control LIFEPAK defibrillator/monitors are designed and manufactured to be reliable and to require minimal maintenance. Routine periodic testing and maintenance will help to ensure that this instrument remains in good operating condition and is ready for use when needed. It will also promote operator familiarity with the defibrillator/monitor.

The following guideline is intended to test the functional and electrical-safety of the defibrillator/monitor at periodic intervals. It complements the internal quality-assurance programs of the hospital, clinic, or emergency medical service and is not a substitute for such programs.

Testing should be accompanied by a thorough visual inspection of the defibrillator/monitor. The unit should be examined for cracks in the case, power cord, and strain relief bushings; for pitted paddle plates; for the presence of gel on paddles or paddle storage wells; and for the proper function of controls. If necessary, corrective action should be taken immediately.

While examining the unit, the operator should ensure that all accessories (e.g., internal defibrillation cables and paddles, patient cable, pediatric paddle adapters, etc.) are present and functional.

Routine testing of defibrillator/monitors operating from battery power will consume battery power. The operator should assure that batteries are promptly recharged according to the procedure in the Operating Instructions.

Physio-Control recommends the following minimum program of routine testing and maintenance. Consult the Operating Instructions and Service Manual provided with the defibrillator/monitor for specific instructions. If necessary, replacement manuals may be ordered in the USA by calling the Physio-Control Partsline at 1-800/331-1086. Outside the USA, please contact your local Physio-Control sales and service office.

<table>
<thead>
<tr>
<th>Clinical Staff</th>
<th>Biomedical Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td></td>
</tr>
<tr>
<td>After Use</td>
<td></td>
</tr>
<tr>
<td>As Required</td>
<td>Weekly</td>
</tr>
<tr>
<td>Weekly</td>
<td>Quarterly</td>
</tr>
</tbody>
</table>

Clean defibrillator/monitor

Ensure that all supplies and accessories are present and in operating condition (e.g., gel, ECG paper, patient cable, electrodes, etc.)

Check/change recorder paper

Operational tests: monitor function, defibrillator discharge

Inspect case, and power and paddle cords, for damage

Verify that paddles are clean

Electrical safety test, performance verification, and calibration check

If a discrepancy in defibrillator/monitor operation is found, ensure that corrective action is taken immediately.
This Physiologic Control defibrillator/monitor is a therapeutic medical device intended for use under the direction or guidance of a physician. Direct current defibrillation is a recognized means of terminating certain potentially fatal cardiac arrhythmias.

A direct current defibrillator applies a brief high-energy pulse of electricity to the heart. This energy may be delivered either through external paddles or electrodes on the chest, or through internal paddles applied directly to the heart.

Defibrillation is only one aspect of the medical care required to resuscitate a patient in ventricular fibrillation. Depending on the situation, other supportive measures may include:
- Establishment and maintenance of a patent airway
- Ventilation, including administration of oxygen
- Maintenance of blood circulation
- Pharmacologic measures

Among other factors, it is recognized that the likelihood of successful resuscitation of a patient depends on the length of time between the onset of ventricular fibrillation and defibrillation. Rapid defibrillation and prompt follow-up care are essential. The physiological state of the patient may affect the likelihood of defibrillation or skeletal muscle contractility. Thus, failure to correct the arrhythmia or to resuscitate the patient is not a reliable indicator of defibrillator performance. Similarly, the patient's muscular response to defibrillator shock is not a reliable indicator of the energy delivered.

**Indications for Defibrillator Use**

Asynchronous

1. Ventricular fibrillation
2. Ventricular tachycardia with cardiovascular collapse (when preparation for synchronized cardioversion may cause unacceptable delay)

Synchronized Cardioversion

Rhythms which are commonly cardioverted include:
- Atrial fibrillation or atrial flutter
- Paroxysmal atrial tachycardia or junctional tachycardia
- Ventricular tachycardia

**Contraindications**

1. Idioventricular rhythms
2. Second or third degree heart blocks
3. Digitalis toxicity

**Precautions**

Because of the high energy delivered by the defibrillator, certain precautions should be taken.

1. Ensure that all defibrillator operators are thoroughly familiar with the Operating Instruction Manual, indicators, controls, and their functions.
2. Ensure that the defibrillator is kept in proper operating condition at all times through routine maintenance and repair by qualified personnel. See the Service Manual for details.
3. If battery powered, ensure that the batteries are kept charged and ready for use. Also, ensure that battery maintenance procedures are followed. See Operating Instructions for details. If the integrity of the grounding system is in doubt, the unit should be operated from internal batteries.
4. Before delivering a defibrillator shock, verify that the patient's rhythm is one for which a shock is indicated. Eliminate sources of electrocardiograph (ECG) artifact by assuring good electrode contact with the skin, minimizing motion of patient and electrode cables (this may necessitate a brief (less than 5 to 10 seconds) interruption in cardiopulmonary resuscitation), and by using adequate conductive gel, interface material, or adhesive defibrillation electrodes. Radio transmitters and defibrillator equipment may also be a source of ECG interference. If the patient ECG is monitored through defibrillator paddles, make certain that the lead selector is set to “PADDLES.”
5. Protect the patient from skin burns by using an adequate amount of an appropriate conductive material. Be sure that the gel or conductive pads cover the entire surface of the paddle electrode yet do not become continuous from one paddle to the other, and that the gel or pads do not dry. Ensure that self-adhesive defibrillation electrodes remain firmly attached to the skin.
6. Apply gel, paste, defibrillation electrodes or defibrillation gel pads before turning on the defibrillator.
7. Disconnect from the patient any equipment which may be damaged by the defibrillator shock. This may include external transvenous pacing devices.
8. If the patient has an implanted pacemaker, check pacemaker function following defibrillation or cardioversion.
9. Press paddles firmly to the patient's chest.
10. Do not place defibrillator paddles, electrodes, gel, or pads in contact with ECG monitoring electrodes.
11. Always use the patient cable for ECG monitoring during synchronized cardioversion. This will reduce the possibility of discharge may be inadvertently triggered by paddle motion. Also, refer to Operating Instructions for information on setting the "ECG Size" control for proper R-wave sensitivity.
12. Be sure that gel is in contact with the operator's hands on the paddles.
13. Ensure that all personnel are clear of the patient before delivering a shock.
14. During defibrillation, the operator should not make any contact with the patient except through the defibrillator paddle handles. The operator should also avoid contact with metal objects such as bed frames or stretchers which may provide unwanted current pathways.
15. Do not discharge the defibrillator to "open air." To remove unwanted charge, turn the defibrillator to the "OFF" setting.
16. Do not discharge the defibrillator with the paddles shorted together. Doing so may cause pitting on the paddles which can increase the risk of patient burns. Use a defibrillator test load.
17. Treat a defibrillator with respect. Do not touch the metal paddle plates, defibrillation electrodes, or hold the paddles to your body when the defibrillator is on.
18. Clean the paddles and paddle storage areas after use, even when gel is a conductive pathway that could endanger the operator during a later use, and could impair paddle monitoring. Discard self-adhesive defibrillation electrodes after use.
19. Only gas sterilize internal paddles and cable sets. Percutaneously inspect all connections for evidence of corrosion or degradation. Replace sets which show signs of corrosion or degradation.
20. Periodically test the defibrillator. This will help to ensure that the defibrillator will be ready to use in an emergency. It will also help maintain operator familiarity. Press paddles firmly into the test lead when discharging to prevent formation of pits. Such pits may increase the risk of patient burns. The frequency and extent of routine testing should be determined by institutional policy and practice.

iv infusion for MRI

NEW!
Programmable flow rate and bolus limits.
NEW!
One-touch automatic bolus.
NEW!
Integrated 20-60 ml syringe holder.
NEW!
Two additional infusion modes.

CONTINUUM

Just got better.
Sincerely,

Your organization will be extremely satisfied with the products and services we provide. We supply all sorts of medical equipment and medical users. In addition, you'll never be disappointed with our products. We will purchase new infusion pumps, insufiion pumps, and medical devices. We can also help you dispose of old equipment. It will also buy your surplus equipment. We have a website at www.medimedic.com for detailed information.

Thank you for taking time out of your busy day to discuss your medical care needs.

Dear Donald,

I rang 9:40, then 9:40. Do 480.

We will also help you dispose of old equipment.

June 16, 2005

Donald Balco
<table>
<thead>
<tr>
<th>Make/Model</th>
<th>Description</th>
<th>Price 1</th>
<th>Purchase Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medtronic 3080</td>
<td>Veinome</td>
<td>8,990.00</td>
<td>Free Rental</td>
</tr>
<tr>
<td>Siemens 9000</td>
<td>Veinome</td>
<td>8,739.00</td>
<td>Free Rental</td>
</tr>
<tr>
<td>GE Healthcare</td>
<td>Veinome</td>
<td>9,280.00</td>
<td>Free Rental</td>
</tr>
<tr>
<td>Philips</td>
<td>Veinome</td>
<td>8,950.00</td>
<td>Free Rental</td>
</tr>
<tr>
<td>Toshiba</td>
<td>Veinome</td>
<td>9,000.00</td>
<td>Free Rental</td>
</tr>
<tr>
<td>Siemens</td>
<td>Veinome</td>
<td>8,790.00</td>
<td>Free Rental</td>
</tr>
<tr>
<td>GE Healthcare</td>
<td>Veinome</td>
<td>8,790.00</td>
<td>Free Rental</td>
</tr>
<tr>
<td>Philips</td>
<td>Veinome</td>
<td>8,900.00</td>
<td>Free Rental</td>
</tr>
<tr>
<td>Toshiba</td>
<td>Veinome</td>
<td>8,750.00</td>
<td>Free Rental</td>
</tr>
</tbody>
</table>

Below are our current specials:

- **Baxter** - Special on specific models
- **Siemens** - Reductions on select models
- **GE Healthcare** - Discounts on multiple models

Purchasing these devices can enhance your clinical capabilities while reducing costs.
Amy Ballard has requested more information about Ardus Medical, Inc.

Listed below is their information:

Name: Amy Ballard
Business Name: MMS Medical
Email: aballard@mmsmedical.com
Phone: 860-291-8080
Other: product info.

Question: After-sales Service
Comments: Good Afternoon, I would like you to know if you would mail me 3 copies of your Product Catalogs. Our account # is 07253. The Address is: MMS Medical, 238 Prestige Park Road, East Hartford, CT 06108. Attn: Amy/Customer Service.