

## Front View

Figure 3-1 shows the front of the LIFEPAK 15 monitor/defibrillator. The front of the device is described in the following sections.



Figure 3-1 Front View

## Area 1

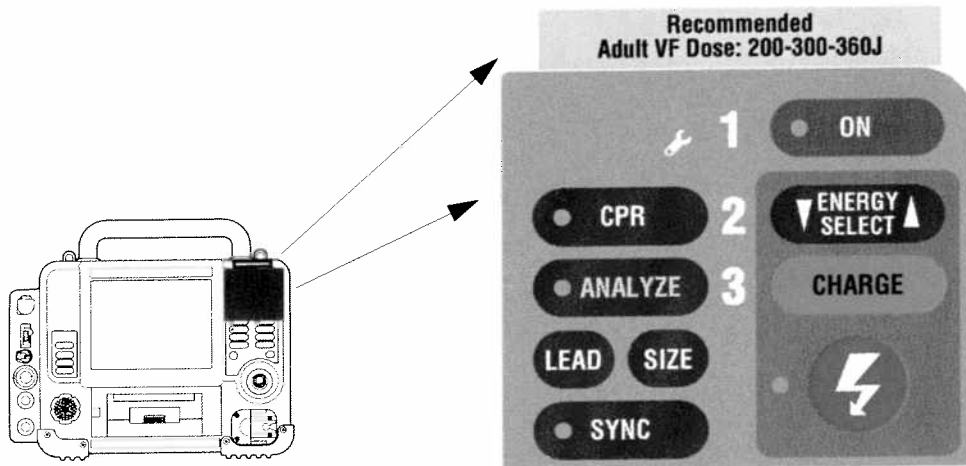


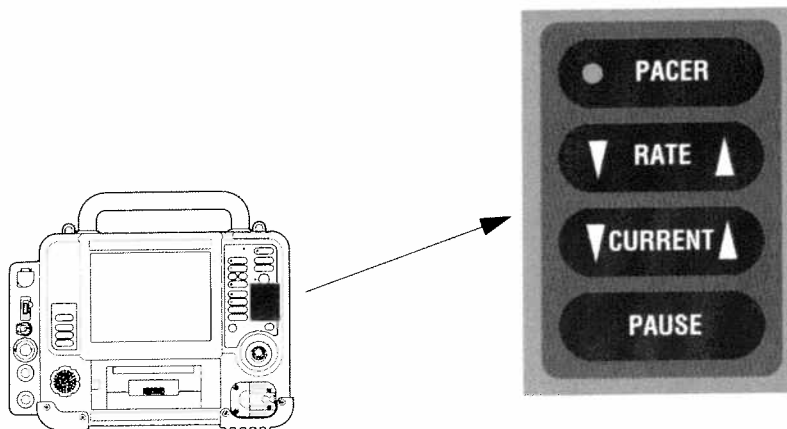


Figure 3-2 Area 1 Controls

**Table 3-1** Area 1 Controls

CONTROL	DESCRIPTION	FOR MORE INFORMATION
VF dose label	Physio-Control recommended energy dose for adult Ventricular Fibrillation (VF)	See <i>Biphasic Clinical Summaries</i> at <a href="http://www.physio-control.com">www.physio-control.com</a>
1 ON	Turns device ON or OFF. LED illuminated when ON. Press and hold to turn device off.	
2 ENERGY SELECT	Increases or decreases energy level in Manual mode	See page 5-21
3 CHARGE	Charges the defibrillator in Manual mode	See page 5-21
	Shock button. Initiates discharge of defibrillator energy to patient. LED flashes when charging is complete.	See page 5-21
	Illuminated Service LED indicates a condition exists that prevents or could prevent normal defibrillator operation	See page 9-18
CPR	Controls CPR metronome. LED illuminated when metronome function is active.	See page 5-24
ANALYZE	Activates Shock Advisory System™ (AED mode). LED is illuminated when AED is analyzing the ECG, and flashes when user is prompted to push <b>ANALYZE</b> .	See page 5-7
LEAD	Changes ECG lead	See page 4-4
SIZE	Changes ECG size	See page 4-5
SYNC	Activates Synchronized mode. LED is illuminated when Sync mode is active and flashes with detection of each QRS.	See page 5-26

## Area 2



**Figure 3-3** Area 2 Controls

**Table 3-2** Area 2 Controls

CONTROL	DESCRIPTION	FOR MORE INFORMATION
PACER	Activates pacer function. LED illuminated when function is activated and flashes with each current pulse.	See page 5-31
RATE	Increases or decreases pacing rate	See page 5-31
CURRENT	Increases or decreases pacing current	See page 5-31
PAUSE	Temporarily slows pacing rate	See page 5-31

Area 3

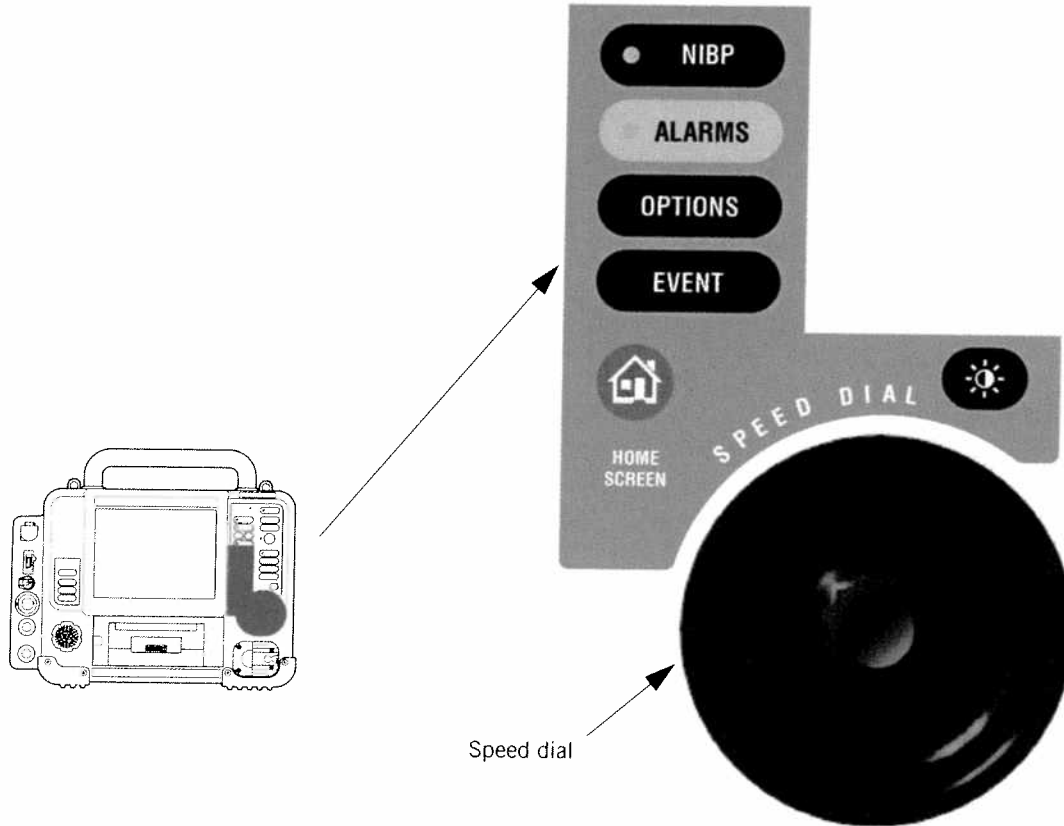

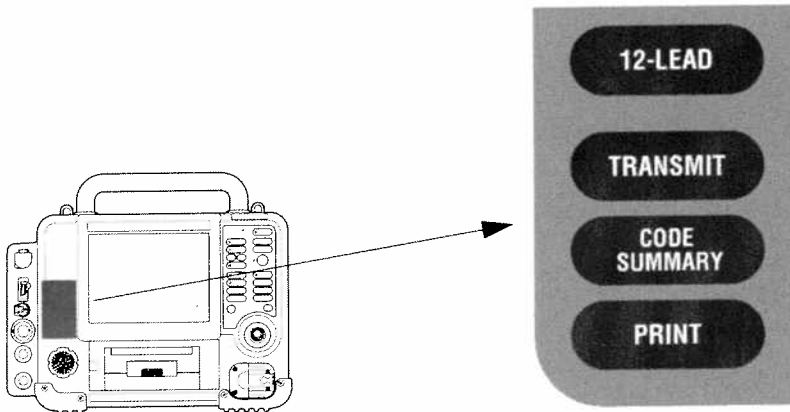


Figure 3-4 Area 3 Controls

Table 3-3 Area 3 Controls

CONTROL	DESCRIPTION	FOR MORE INFORMATION
NIBP	Initiates blood pressure measurement. LED illuminated when BP measurement is being obtained.	See page 4-35
ALARMS	Activates and silences alarms. LED illuminated when alarms are enabled and flashes when an alarm condition occurs.	See page 3-21
OPTIONS	Accesses optional functions	See page 3-23
EVENT	Accesses user-defined events	See page 3-25
HOME SCREEN	Returns to Home Screen display	See page 3-16
SPEED DIAL	Scrolls through and selects screen or menu items	See page 3-19
	Display mode button switches between color display and high contrast SunVue™ display	

## Area 4



**Figure 3-5** Area 4 Controls

**Table 3-4** Area 4 Controls

CONTROL	DESCRIPTION	FOR MORE INFORMATION
12-LEAD	Initiates acquisition of 12-lead ECG	See page 4-14
TRANSMIT	Initiates transmission of patient data	See page 8-12
CODE SUMMARY	Prints CODE SUMMARY™ critical event record	See page 7-4
PRINT	Starts and stops printer	See page 7-10

Area 5

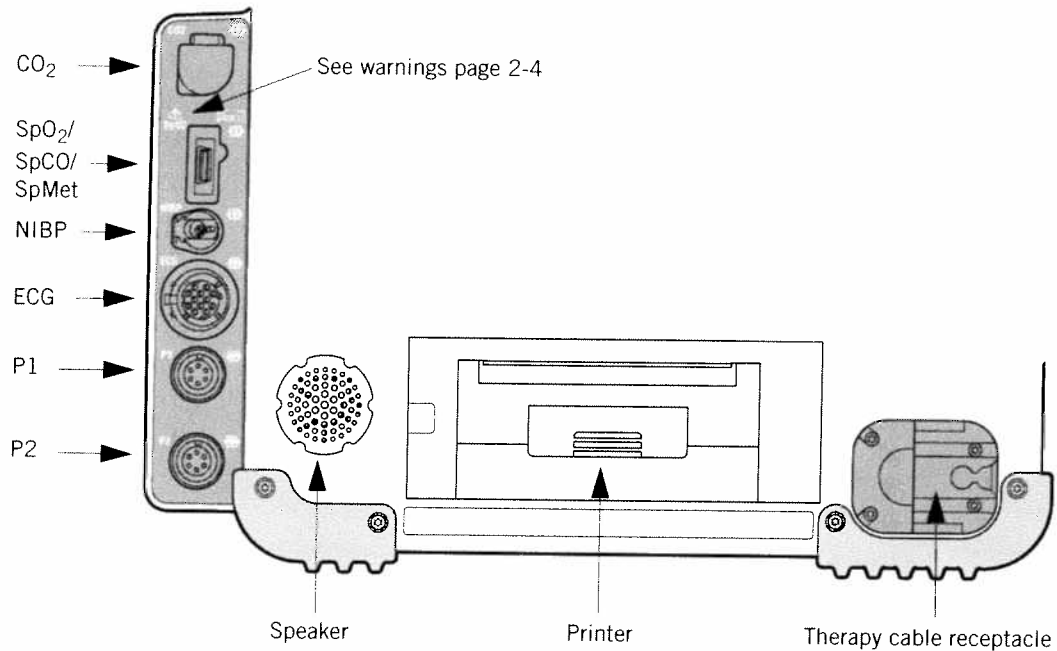

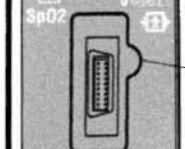

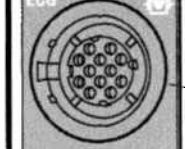
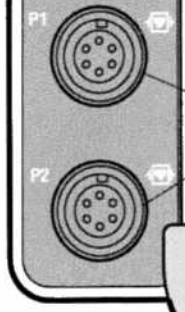


Figure 3-6 Area 5 Connectors, Speaker, and Printer

Table 3-5 Area 5 Connectors, Speaker, and Printer

LABEL	DESCRIPTION	FOR MORE INFORMATION
CO2	FilterLine® set port	See page 4-43
SpO2/SpCO/SpMet	Sensor cable port	See page 4-24
NIBP	Pneumatic tubing port	See page 4-35
ECG	Green electrically isolated ECG cable port	See page 4-3
P1	Invasive pressure cable port	See page 4-51
P2	Invasive pressure cable port	See page 4-51
Speaker	Projects device tones and voice prompts	
Printer	Door for 100 mm printer paper	See page 9-17
Therapy cable receptacle	QUIK-COMBO® therapy cable and standard (hard) paddles cable receptacle	See page 3-11

## Connectors

CONNECTOR	ACTION
 <p>CO<sub>2</sub></p>	<p><b>Connect:</b> Open CO<sub>2</sub> port door, insert FilterLine connector, and turn clockwise until connector is firmly seated.</p> <p><b>Disconnect:</b> Rotate FilterLine connector counterclockwise and pull connector out.</p>
 <p>SpO<sub>2</sub>/ SpCO/ SpMet</p>	<p><b>Connect:</b> Align cable connector with SpO<sub>2</sub> port and push in until connector clicks into place.</p> <p><b>Disconnect:</b> Press the gray buttons on each side of the cable connector simultaneously and pull connector out.</p>
 <p>NIBP</p>	<p><b>Connect:</b> Insert NIBP tubing connector into the NIBP port.</p> <p><b>Disconnect:</b> Press the latch on the left side of the port and pull tubing connector out.</p>
 <p>ECG</p>	<p><b>Connect:</b> Align the green ECG connector with the ECG port; position the white line on the cable facing left. Insert the cable connector into the port until the connector is firmly seated.</p> <p><b>Disconnect:</b> Pull the ECG connector straight out.</p>
 <p>P1 P2</p>	<p><b>Connect:</b> Align the IP (invasive pressure) cable connector with the P1 or P2 port; position the gap on the connector facing up. Insert the cable connector into the port until the connector is firmly seated.</p> <p><b>Disconnect:</b> Grip the connector and pull straight out.</p>

### Connecting and Disconnecting the Therapy Cable

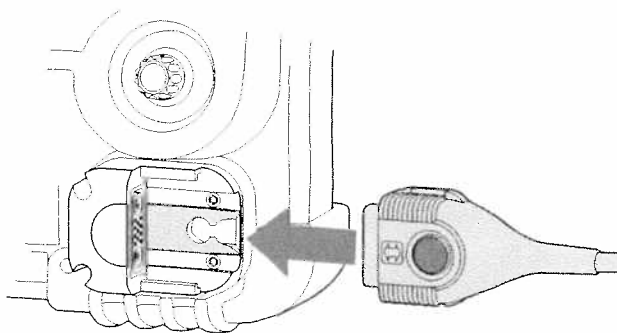
#### WARNING

##### POSSIBLE EQUIPMENT DAMAGE AND INABILITY TO DELIVER THERAPY

To help protect the therapy cable connector from damage or contamination, keep therapy cable connected to the defibrillator at all times. Inspect and test the therapy cable daily according to the Operator's Checklist in the back of this manual. Physio-Control recommends replacement of therapy cables every three years to reduce the possibility of failure during patient use.

**IMPORTANT!** The LIFEPAK 15 monitor/defibrillator QUIK-COMBO therapy cable and standard (hard) paddles have the same type of connector and connect to the defibrillator at the same location. These therapy cables are not compatible with other LIFEPAK defibrillator/monitors.

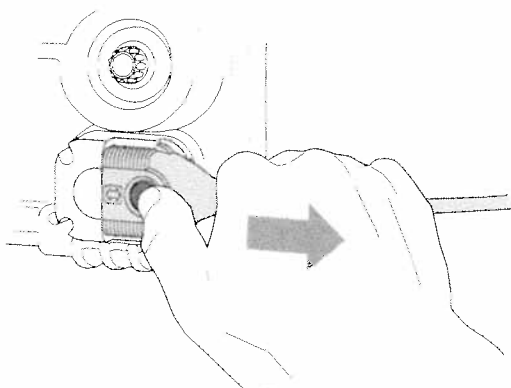
To connect a therapy cable to the defibrillator:



1. Align the therapy cable connector with the receptacle.
2. Slide the therapy cable until you feel the connector lock in place. You will also hear a "click."

Figure 3-7 Connect Therapy Cable

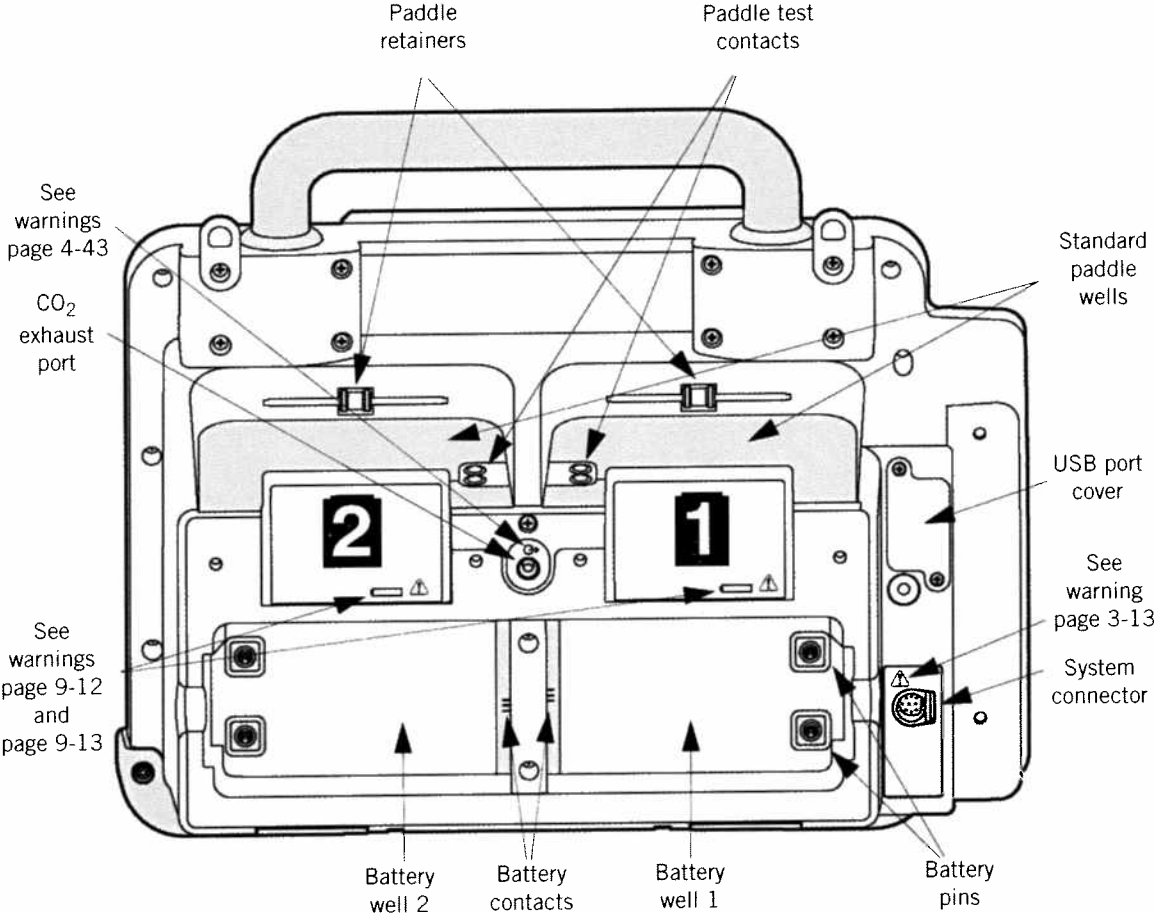
To disconnect the therapy cable from the defibrillator:



1. Press the release button on the therapy cable connector.
2. Slide the therapy cable connector out.

Figure 3-8 Disconnect Therapy Cable

# Back View



**Figure 3-9** Back View

**Table 3-6** Back View

LABEL	DESCRIPTION	FOR MORE INFORMATION
Battery wells, pins, and contacts	Each well holds one Lithium-ion battery. Two pins in each well transfer the battery power. Battery contacts transfer battery status information.	See page 9-12
CO <sub>2</sub> exhaust port	Connects to a scavenger system when monitoring EtCO <sub>2</sub> during use of anesthetics.	See page 4-43
Standard paddle wells, retainers, and test contacts	Paddle wells stow standard (hard) paddles. Retainers provide secure retention and quick removal of the paddles. Test contacts allow complete paddles defibrillation checks according to the Operator's Checklist.	See page 6-5 and Operator's Checklist in the back of this manual
USB port cover	Protects USB port from the environment.	For future use
System connector	Connects device to a gateway or external computer for transfer of patient reports. Also provides real-time ECG output.	See page 7-3

**WARNING****SHOCK HAZARD**

If you are monitoring a patient and using the system connector, all equipment connected to the system connector must be battery powered or electrically isolated from AC power according to EN 60601-1. If in doubt, disconnect the patient from the defibrillator before using the system connector. Only use Physio-Control recommended data transmission cables. For more information, contact Physio-Control Technical Support.

**Note:** To prevent inadvertent depletion of the defibrillator batteries, disconnect external devices from the system connector when not in use.

## Batteries

The LIFEPAK 15 monitor/defibrillator operates only on battery power using two Lithium-ion batteries, which must be removed from the device and charged in the Station or Mobile Li-ion Battery Charger.

**IMPORTANT!** The LIFEPAK 15 monitor/defibrillator Lithium-ion batteries are not interchangeable with batteries that are used in other LIFEPAK defibrillators.

Routinely inspect batteries for damage or leakage. Recycle or discard damaged or leaking batteries.

Each battery has a fuel gauge that indicates the approximate charge level in the battery. Press the gray button above the battery symbol to check the battery's charge level prior to installing it in the defibrillator. The four battery indicators shown here represent approximate charge—greater than 70%, greater than 50%, greater than 25%, and 25% or less, respectively.

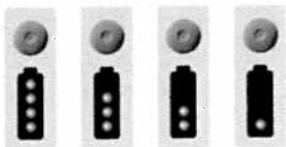


Figure 3-10 Battery Charge Indicators

Battery warning indicators are shown below. A single flashing LED indicates that the battery is very low and needs to be charged. Any two or more flashing LEDs indicate that the battery is faulty and should be returned to your authorized service personnel.

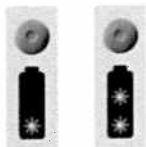


Figure 3-11 Battery Warning Indicators

**Note:** Older or heavily used batteries lose charge capacity. If a battery fuel gauge indicates fewer than four LEDs immediately after completing a charge cycle, the battery has reduced capacity. If the battery fuel gauge shows two or fewer LEDs after the battery completes a charge cycle, the battery should be replaced.

To install a battery:

1. Confirm that the battery is fully charged.
2. Inspect battery pins in the battery wells for signs of damage.
3. Align battery so battery clip is over the pins in the battery well.
4. Insert the end of the battery that is opposite the battery clip into the battery well.
5. Firmly press the clip end of the battery into the battery well until it clicks into place.
6. Repeat Step 1 through Step 5 to insert second battery.

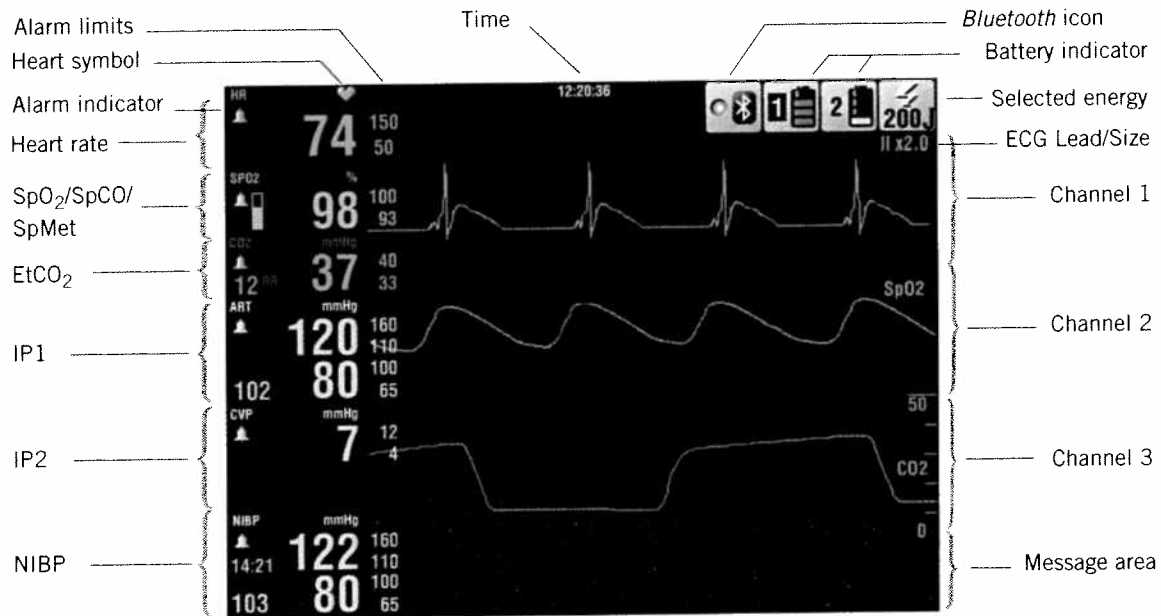
To remove a battery, press the battery clip in and tilt the battery out of the battery well.

**WARNING****POSSIBLE LOSS OF POWER DURING PATIENT CARE**

Battery pins in the defibrillator may be damaged if batteries are dropped or forced into battery wells. Inspect pins routinely for signs of damage. Keep batteries installed at all times except when the device is removed from service for storage.

For information about battery maintenance, see "Battery Maintenance" on page 9-12.

# Home Screen



**Figure 3-12** Home Screen

The Home Screen is the main screen that displays ECG and other information. When a monitoring cable is attached to the device, the corresponding monitoring area on the screen is activated and the current patient values for that function are displayed. For example, when you connect an SpO<sub>2</sub> cable, the SpO<sub>2</sub> area is activated on the screen. SpO<sub>2</sub> values for the patient appear after the patient is connected. When the cable is disconnected, the SpO<sub>2</sub> patient values are replaced by dashes (--). Separate controls do not activate the monitoring functions, except for NIBP.

Each vital sign monitoring area is colored to match its waveform. This color scheme aids in associating the displayed waveform with its vital sign value. When a function does not have a waveform displayed, the vital sign area is gray.

## WARNINGS

### FAILURE TO ACCURATELY COUNT HEART RATE

Patient heart rates above 300 bpm may not be counted accurately and may be displayed as dashes (---), a value near 300, or a value that is approximately one-half the actual patient heart rate. Increasing the ECG size to 2.0 or greater may improve the accuracy of the displayed heart rate value. Do not rely solely on the displayed heart rate for patient assessment. Use a printout of the ECG to calculate actual patient heart rate.

## WARNINGS (CONTINUED)

### FAILURE TO DETECT A CHANGE IN ECG RHYTHM

Heart rate meters may count internal pacing pulses during cardiac arrest or some arrhythmias. Do not rely entirely on heart rate meter alarms. Keep pacemaker patients under close surveillance.

**IMPORTANT!** Set the high heart rate alarm for patients who have heart rates above 300 bpm.

- For patient heart rates of 20 to 317 bpm, the device consistently sounds the alarm when ECG size is set to 1.0 or greater.
- For patient heart rates of 318 to 350 bpm, the device may intermittently silence the alarm for up to five seconds.

**Table 3-7** Home Screen

AREA	DESCRIPTION	FOR MORE INFORMATION
Alarm limits	Limits display along the right side of the parameter.	See page 3-21
Heart symbol	Flashes with detected QRS signals.	
Alarm indicator	Indicates whether alarms are on or silenced. Absence of indicator means alarms are off.	See page 3-21
Heart rate	Device accurately detects and displays heart rates between 20 and 300 beats per minute (bpm). If heart rate is below 20 bpm or pacing is active, dashes (---) appear. If ECG is not active, the SpO <sub>2</sub> or NIBP monitor can display pulse rate, indicated by <b>PR (SpO<sub>2</sub>)</b> or <b>PR (NIBP)</b> . If the patient's heart rate is above 300 bpm, dashes (---) may appear or the displayed rate may be less than the patient's heart rate.	
SpO <sub>2</sub> /SpCO/SpMet	Oxygen saturation level displays as a percentage from 50 to 100. Saturation below 50% displays as <50%. A fluctuating bar graph represents the pulse signal strength. When available and selected, the SpCO or SpMet value is displayed as a percent for 10 seconds, and then the SpO <sub>2</sub> area reverts to the SpO <sub>2</sub> reading.	See page 4-24
EtCO <sub>2</sub>	End-tidal CO <sub>2</sub> level displays in mmHg, Vol%, or kPa. Respiratory rate (RR) displays in breaths per minute.	See page 4-43

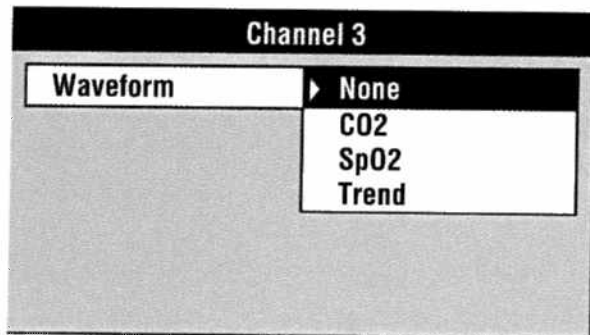
**Table 3-7** Home Screen (Continued)

AREA	DESCRIPTION	FOR MORE INFORMATION
IP1/IP2	Displays systolic, diastolic, and mean invasive pressures in mmHg. Two channels are available; default labels are P1 and P2. User-selectable labels include the following: <ul style="list-style-type: none"><li>• ART (arterial pressure)</li><li>• PA (pulmonary artery pressure)</li><li>• CVP (central venous pressure)</li><li>• ICP (intracranial pressure)</li><li>• LAP (left atrial pressure)</li></ul>	See page 4-51
NIBP	Displays systolic, diastolic, and mean arterial pressures (MAP) in mmHg, and time to next BP, when interval is set.	See page 4-35
Time	Real or elapsed.	See <i>LIFEPAK 15 Monitor/Defibrillator Setup Options</i> provided with your device.
<i>Bluetooth icon</i>	Indicates <i>Bluetooth</i> capability. The LED is illuminated when a <i>Bluetooth</i> connection is established. Select this icon to access the <i>Bluetooth</i> setup menu.	See page 8-3
Battery indicator	Indicates presence of battery in battery well 1 and 2, relative level of charge, and battery in use.	See page 3-20
Selected energy	Selected defibrillation energy.	
ECG Lead/Size	Lead and size for ECG.	See page 4-4
Channel 1	Displays the primary ECG waveform and is always visible.	See page 4-4
Channel 2	Displays an additional waveform, a continuation of the Channel 1 ECG (cascading ECG), or a trend graph.	See page 4-31
Channel 3	Displays an additional waveform or a trend graph.	See page 4-62
Message area	Displays up to two lines of status messages.	See Appendix B

## Navigating the Home Screen

Use the **SPEED DIAL** to navigate around the Home Screen. As you rotate the **SPEED DIAL**, the individual vital sign areas and waveform channels on the Home Screen are outlined. If you outline a vital sign area or channel and then press the **SPEED DIAL**, a menu appears.

For example, rotate the **SPEED DIAL** to outline Channel 3, and then press the **SPEED DIAL**. The following menu appears.



1. Rotate the **SPEED DIAL** to the desired setting.
2. Press the **SPEED DIAL** to select the setting.

Whenever a menu is displayed, the ECG is always visible in Channel 1. To return to the Home Screen from any menu, press the **HOME SCREEN** button.

Rotate and press the **SPEED DIAL** to select an option in a menu.






## Battery Status Indicators

The Home Screen displays battery indicators that show the following information about the batteries installed in the defibrillator:

- Presence or absence of battery in battery well
- Battery in use
- Battery charge state

When two batteries are installed, the defibrillator uses the battery with the lowest level of charge first. The battery in use is indicated by a white battery number in a black box. When a battery reaches the replace battery state, the defibrillator automatically switches to the other battery. Table 3-8 provides a description of the various battery status indicators.

**Table 3-8** Battery Status Indicators

INDICATOR	MEANING	DESCRIPTION
	Active battery	The defibrillator is using the battery in well 1 for power. Battery status indicators display up to four green bars. Each green bar represents approximately 25% remaining charge. For example, three green bars indicate about 75% remaining charge.
	Low battery	Battery in well 1 is in use and is low. One yellow bar indicates 5% to 10% remaining charge.
	Very low battery	Battery in well 1 is in use and is very low. One red flashing bar indicates 0 to 5% remaining charge. The defibrillator automatically switches to the other battery only if adequate charge is available. If both batteries show red bars, the <b>REPLACE BATTERY</b> voice prompt occurs.
	Unrecognized battery	Battery in well 2 is not in use. Battery communication failed or a non-Physio-Control battery is installed. The battery may power the defibrillator but the level of charge is unknown and low battery messages and prompts will not occur.
	No battery installed or fault detected	No battery is installed in battery well 1, or a fault was detected in the battery in well 1 and the device will not use the battery.

**Note:** Older or heavily used batteries lose charge capacity. If a fully charged battery is installed in the defibrillator and the battery status indicator shows less than four bars, the battery has reduced capacity. If a battery status indicator shows only one or two bars after a fully charged battery is installed, the battery has less than half the normal use time and should be recycled.

# Alarms

LIFEPAK 15 monitor/defibrillator alarms can be set up to be ON or OFF when the defibrillator is turned on. For more information, see the *LIFEPAK 15 Monitor/Defibrillator Setup Options* provided with your device.

When alarms are set up to be ON, default limits are set. The limits temporarily appear to the right of the active vital signs. For all vital sign default alarm limits, see Table A-3 on page A-12.

If alarms are set up to be OFF, press **ALARMS** to enable the alarms. Whether alarms are set up to be ON or are enabled by pressing **ALARMS**, they can only be turned off by pressing **ON** to turn off the device. If power is lost for less than 30 seconds, for example due to a system reset or changing the only active battery, alarm settings are restored automatically.

**IMPORTANT!** Set the high heart rate alarm for patients who have heart rates above 300 bpm.

- For patient heart rates of 20 to 317 bpm, the device consistently sounds the alarm when ECG size is set to 1.0 or greater.
- For patient heart rates of 318 to 350 bpm, the device may intermittently silence the alarm for up to five seconds.

## Setting Alarms

When you press **ALARMS**, the following menu appears:

Alarms	
Quick Set	
Limits	Wide
Silence	2 Min
VF/VT Alarm	Off

Select **QUICK SET** to activate the alarms for all active monitoring functions.

The Quick Set limits automatically set high and low limits based on the patient's current vital sign values. For example, if the patient's HR is 70, selecting **WIDE** results in a high limit of 110 and a low limit of 45; selecting **NARROW** results in a high limit of 100 and a low limit of 50. The default is **WIDE**.

Alarms	
Quick Set	
Limits	Wide
Silence	Narrow
VF/VT Alarm	

Select **LIMITS** to change alarm limits to **WIDE** or **NARROW**. See Table A-3 on page A-12.


Select **SILENCE** to turn off the audible alarm for up to 15 minutes. If an alarm limit is exceeded while the alarm is silenced, the violated vital sign flashes and an alarm message appears, but the alarm tone remains silent.


**Note:** For patients with heart rates above 300 bpm, increasing the ECG size to 2.0 or greater may improve the performance of the heart rate alarm.

**Note:** The heart rate display and corresponding heart rate alarm should not be relied upon to provide an indication of ventricular fibrillation. Turn on the VF/VT alarm.

Alarms	
Quick Set	
Limits	Wide
Silence	2 Min
VF/VT Alarm	▶ Off

Select **VF/VT ALARM** to turn on continuous monitoring for ventricular fibrillation and ventricular tachycardia in Manual mode.

The VF/VT alarm indicator  appears above the primary ECG when the alarm is ON.



When the alarm is silenced or suspended, a red X appears across the indicator .

Reselect **VF/VT** to turn off this alarm.

**Note:** When the **VF/VT ALARM** is ON, you are limited to **PADDLES** lead or Lead II in Channel 1. See "Selecting ECG Lead" on page 4-4.

**Note:** The VF/VT alarm is suspended when the metronome is active, the noninvasive pacemaker is on, or when standard paddles are attached and **PADDLES** lead is selected. The alarm is also suspended when the monitor/defibrillator is charging or is charged.

## Managing Alarms

The alarm bell symbol indicates when alarms are ON  or OFF . All alarms that are controlled by **QUICK SET** have equal priority. When alarms are ON and an alarm limit is exceeded, a tone sounds and the violated vital sign flashes.

To manage an alarm:

1. Press **ALARMS**. This silences the alarm for 2 minutes.
2. Assess the cause of the alarm.
3. Assess the appropriateness of the limits settings (**WIDE** or **NARROW**).

If the patient is unstable, consider silencing the alarm for up to 15 minutes while attending to the patient. Do NOT reselect **QUICK SET**.

### WARNING

#### POSSIBLE FAILURE TO DETECT AN OUT OF RANGE CONDITION

Reselecting **QUICK SET** resets the alarm limits around the patient's current vital sign values, which may be outside the safe range for the patient.

4. After the patient is stable, reselect **QUICK SET**, if necessary.

When alarms are ON, you can silence them preemptively for up to 15 minutes.

To silence alarms preemptively:

1. Press **ALARMS**.
2. Select **SILENCE**.
3. Select **SILENCE** duration of 2, 5, 10, or 15 minutes.

The message **ALARMS SILENCED** appears in the message area at the bottom of the Home Screen.

**Note:** When you select **SILENCE**, the VF/VT alarm is not silenced.

## Options

Press **OPTIONS** to display the Options menu. Rotate the **SPEED DIAL** to scroll through the choices. Press the **SPEED DIAL** to make a selection.

Options	
Patient...	Archives...
Pacing...	Print...
Date/Time...	User Test
Alarm Volume...	

**Table 3-9** Options Menu Selections

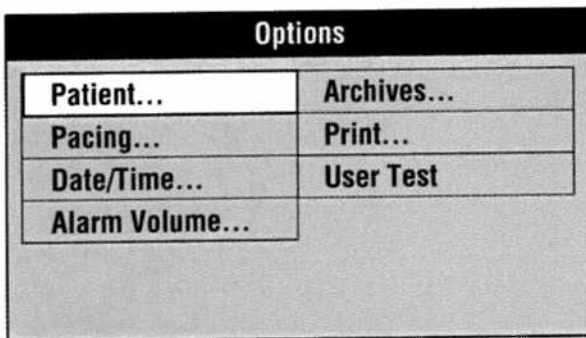
SELECTION	DESCRIPTION	FOR MORE INFORMATION
Patient	Enter patient name, patient ID, incident, age, and sex.	See "Entering Patient Data" in next section
Pacing	Select demand or nondemand pacing. Set internal pacer detection ON or OFF.	See page 5-31
Date/Time	Set date and time. Cycle power for change to take effect.	See <i>LIFEPAK 15 Monitor/Defibrillator Setup Options</i> for time display options.
Alarm Volume	Adjust volume for alarms, tones, voice prompts and CPR metronome.	
Archives	Access archived patient records.	See page 7-11

**Table 3-9** Options Menu Selections (Continued)

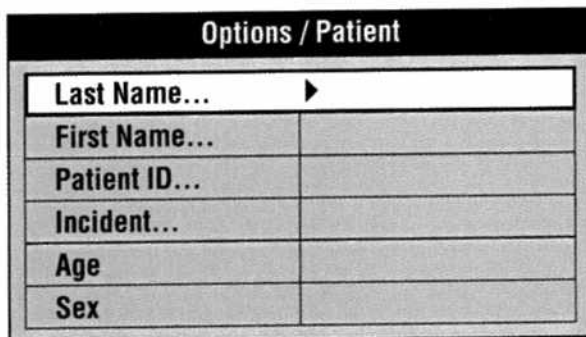
SELECTION	DESCRIPTION	FOR MORE INFORMATION
Print	Select report, format, mode, and speed for printing a current patient report.	See page 7-10
User Test	Initiate device self-test.	See page 9-5

## Entering Patient Data

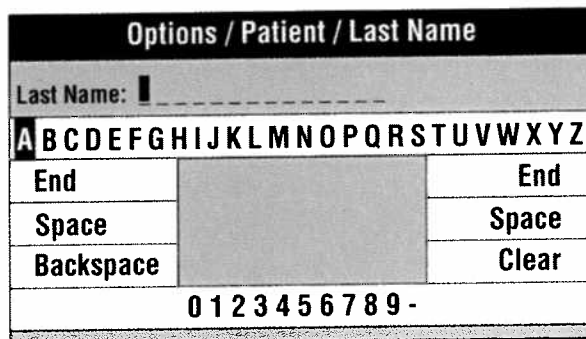
To enter patient data:



1. Press **OPTIONS**.
2. Use the **SPEED DIAL** to select **PATIENT**.



3. Select **LAST NAME**, **FIRST NAME**, **PATIENT ID**, **INCIDENT**, **AGE**, or **SEX**. (**LAST NAME** is selected in the example.)



4. Rotate the **SPEED DIAL** to scroll through the characters and commands. Press the **SPEED DIAL** to make a selection. The selected character appears.
5. Repeat Step 4 until the name is complete.
6. Select **END**.

Three additional commands are available:  
**SPACE**—inserts blank space.  
**BACKSPACE**—deletes last character and moves selection back one space.  
**CLEAR**—clears all characters.

## Events

Use the Events menu to annotate patient events. A selected event appears in the Event log of the CODE SUMMARY critical event record. Events can be customized in Setup mode. For more information, see the *LIFEPAK 15 Monitor/Defibrillator Setup Options* provided with your device.

To select an event:

Events	
Generic	Intubation
Oxygen	CPR
IV Access	Epinephrine
Nitroglycerin	Atropine
Morphine	Lidocaine
Cancel Last	More...

1. Press **EVENT** to display the Events menu.
2. Rotate the **SPEED DIAL** to scroll through the choices. Press the **SPEED DIAL** to make a selection.
3. Select **MORE** to display additional event selections.

Generic 12:20:30

When an event is selected, the event and time stamp appear in the message area on the Home Screen.

### Notes:

- If you highlight an event but do not select it and the menu times out, a Generic event and time stamp are annotated in the event log.
- If you highlight an event but do not select it and then press **HOME SCREEN**, a Generic event and time stamp are annotated in the event log.
- Select **CANCEL LAST** to indicate that an incorrect event was selected. A Cancel Last event and time stamp print in the event log.

