OneStep Pacing
Application Note

Transthoracic (external) pacing has been a standard resuscitation therapy for more than 25 years. While used frequently, the individual clinican's experience with pacing is often quite limited. As a result, errors in application are common. One frequent oversight involves forgetting to attach ECG leads to the patient.

ECG monitoring is required for external pacing. It gives one the ability to see the heart's intrinsic rhythm, determine electrical capture, and control pacer rate. Conventional defibrillator/pacemakers require separate ECG leads, as the residual energy from the pacing pulse would obscure the ECG detected by a standard hands-free electrode.

Figure 1: OneStep Pacing anterior electrode (therapy surface shown)

ZOLL® OneStep™ Pacing

The R Series® defibrillator works with ZOLL's exclusive OneStep pacing system. The OneStep Pacing and OneStep Complete electrodes eliminate the need for a separate ECG cable by incorporating ECG electrodes into the anterior electrode. The triangular-shaped anterior electrode (Figure 1) incorporates a circular multifunction therapy electrode in the middle and three ECG electrodes at the end of each triangle axis. The therapy portion emits the pacing pulse, while the ECG electrodes acquire electrical signals from the heart and function as the monitoring element.

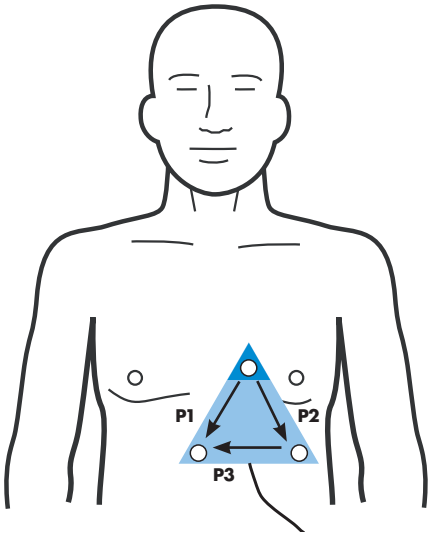

Figure 2: Position of anterior OneStep Pacing electrode showing modified ECG vectors

Different ECG Vectors

Movement of the ECG electrodes from the limbs to the anterior defibrillator electrode changes the ECG vector and leads. When the OneStep Pacing and OneStep Complete electrodes are used, the R Series will display and print the lead labels as P1, P2, and P3. Though different in orientation (Figure 2), these modified leads are sufficient to differentiate between atrial and ventricular rhythms, and discriminate between captured and non-captured rhythms. When pacing is selected, the R Series will default to the P3 lead. Operators have the ability to change leads or adjust gain (size) in order to get the best possible view. If standard leads are required, one can apply a separate cable with conventional ECG electrodes to view standard leads I, II, III.

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Electrode Application

OneStep Pacing requires the use of the anterior/posterior placement scheme. Illustrations on the pads will guide you to the proper locations for each. Prepare each site as you would for standard electrodes by clipping excessive hair and ensuring the skin is dry.

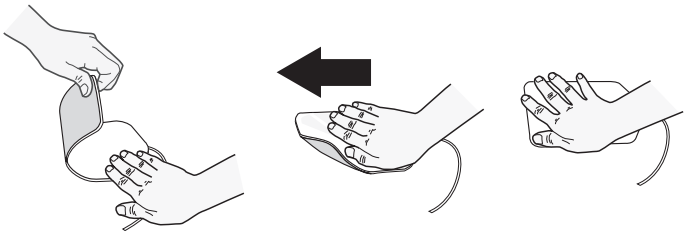


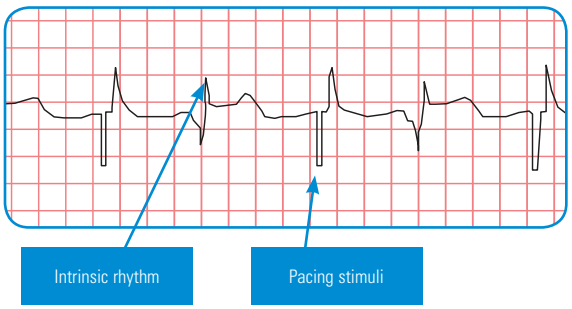
Figure 3: Roll the OneStep electrode into place to avoid air pockets

Air pockets caught between the electrode and skin will reduce both the monitoring and therapeutic effectiveness of the OneStep electrodes. Minimize the potential for air pockets by rolling the electrodes onto the patient (Figure 3). Place the lower portion of the electrode against the patient and roll towards the top while firmly wiping across the electrode to ensure optimal skin coupling.

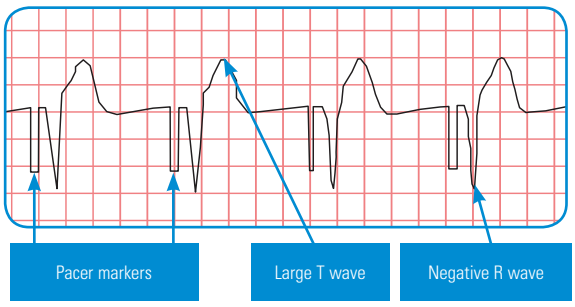
Determining Capture

Determining capture with the OneStep System is the same as with standard leads. Mechanical capture must be confirmed by taking a pulse on a femoral or right radial artery. Avoid assessing the pulse in the carotid and left radial arteries because muscular contractions from the pacing pulse may cause misinterpretation. Electrical capture will be represented by large widened complexes with each pacing stimulus at the selected pacing rate, and the absence of the intrinsic rhythm.

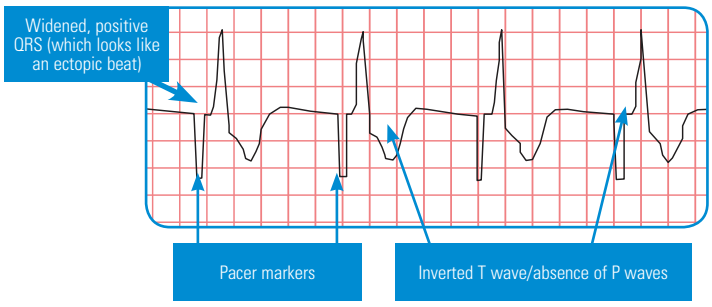
STIMULATED RHYTHM (NON-CAPTURED)



STIMULATED RHYTHM (CAPTURED)



STIMULATED RHYTHM (CAPTURED)



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