

Left Ventricular Protection Period (LVPP) During LV Threshold Testing

SUMMARY

This article provides an overview of the Left Ventricular Protection Period (LVPP) parameter and describes specific programming that can be done to ensure continuous LV pacing throughout LV threshold testing.

Overview of LVPP

Boston Scientific cardiac resynchronization therapy pacemakers and defibrillators pace and sense both the right and left ventricles (RV & LV). A standard LV refractory period ensures that certain sensed LV events do not inappropriately inhibit LV pacing. However, because overall ventricular timing is determined by the RV rather than the LV, Boston Scientific devices incorporate a separate programmable feature designed to inhibit a scheduled LV pace that could occur during the vulnerable recovery period following a sensed LV event. This feature is referred to as Left Ventricular Protection Period (LVPP).

Because an early LV event (e.g., left-sided premature ventricular contraction [PVC]) will not reset the previously scheduled LV pace, it is possible that the LV pace could occur during the vulnerable period following the PVC, potentially inducing a ventricular tachyarrhythmia. Proper programming of LVPP ensures that the LV pace is inhibited during this vulnerable time in the cardiac cycle (Figure 1).

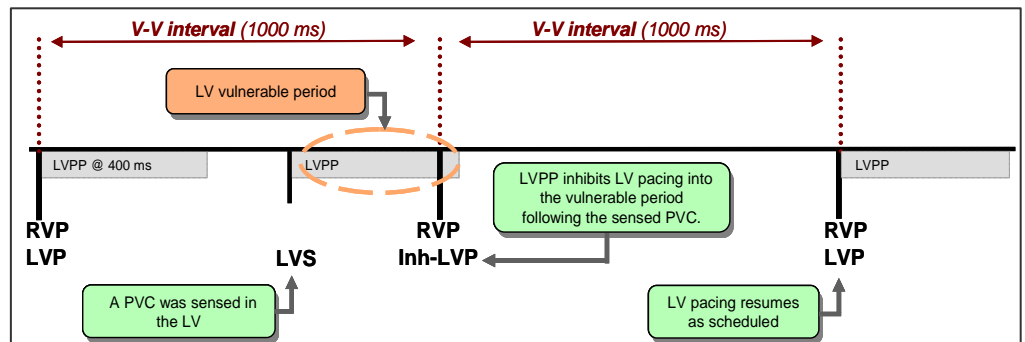


Figure 1. Example of LVPP preventing LV pacing into the LV vulnerable period.

LVPP During LV Threshold Testing

Commanded LV pacing threshold tests may be performed to determine the minimum pace amplitude and/or pulse width needed for capture of the left ventricle. To ensure continuous LV pacing during the test, various parameters should be evaluated and temporarily changed, if needed. In particular, it is important to evaluate the LVPP parameter prior to performing the threshold test because LVPP may interfere with threshold testing due to inhibition of LV pacing after PVCs, other escape rhythms, or a fast intrinsic rate.

To ensure continuous LV pacing during the commanded LV threshold test, consider **temporarily** shortening or turning Off the LVPP parameter located directly on the LV Threshold Test screen.

CRM PRODUCTS REFERENCED

The following are trademarks of Cardiac Pacemakers, Inc., a Boston Scientific company: COGNIS, LIVIAN, CONTAK RENEWAL, CONTAK RENEWAL TR, ZOOM LATITUDE

Products referenced herein may not be approved in all geographies. For comprehensive information on device operation, reference the appropriate product labeling.

CRT-D: Cardiac Resynchronization Therapy Defibrillator
CRT-P: Cardiac Resynchronization Therapy Pacemaker

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LV threshold tests are performed in Temporary Mode; therefore, once the threshold test has ended, the device automatically reverts to its permanently programmed parameters. Figures 2 through 4 show examples of the LVPP parameter located on the Left Ventricular Threshold Test of the ZOOM® LATITUDE® programmer for different device families.

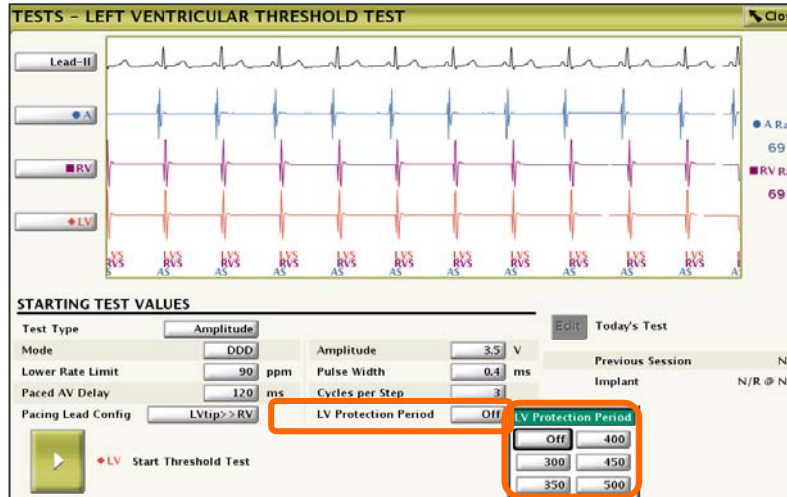


Figure 2. Example of LV Threshold Test screen for COGNIS® CRT-Ds.

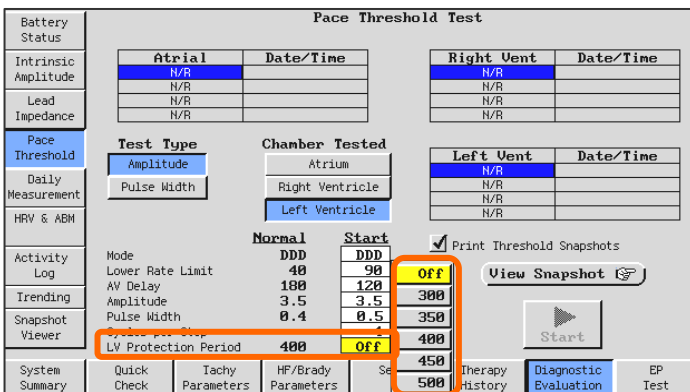


Figure 3. Example of LV Threshold Test screen for CONTAK RENEWAL® and LIVIAN® families of CRT-Ds.

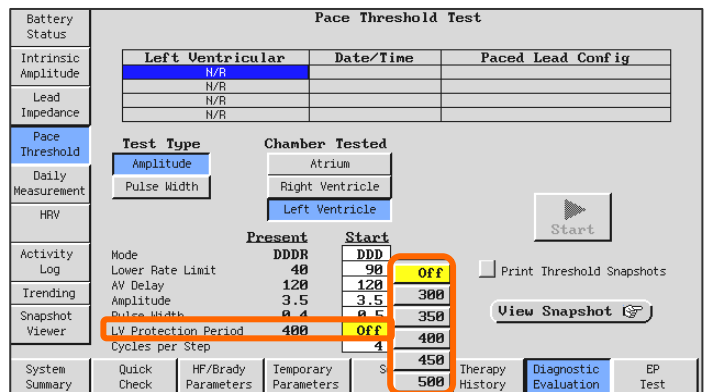


Figure 4. Example of LV Threshold Test screen for CONTAK RENEWAL TR® families of CRT-Ps.