

## Electrocautery and Implantable Device Systems

### BACKGROUND INFORMATION

Boston Scientific pacemakers and defibrillators include protection mechanisms to filter most environmental interference that patients may encounter.

Electrocautery is often used to minimize blood loss during surgery. The probe used to perform electrocautery generates a high frequency electrical current that may be identified as noise or mis-identified as intrinsic heart activity by implanted pacemakers or defibrillators.

This article:

- Describes potential interactions between electrocautery and Boston Scientific implantable pacemakers and defibrillators.
- Provides suggestions to minimize potential interactions.

ICD: Implantable Cardioverter Defibrillator

CRT-D: Cardiac Resynchronization Therapy Defibrillator

CRT-P: Cardiac Resynchronization Therapy Pacemaker

### CRM PRODUCTS REFERENCED\*

All ICDs, CRT-Ds, CRT-Ps and Pacing Systems  
\*Products referenced herein may not be approved in all geographies. For comprehensive information on device operation, reference the appropriate product labeling.

### CRM CONTACT INFORMATION

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1.866.484.3268 – U.S. and Canada  
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High frequency signals generated by electrocautery may interfere with implanted pacemakers or defibrillators. Listed below are potential interactions, programming options, and methods for minimizing interactions whenever electrocautery is used with pacemaker and/or defibrillator patients.

Products	Potential interactions	Programming mitigations
ICDs & CRT-Ds	<ul style="list-style-type: none"> <li>▪ Induce ventricular arrhythmias and/or fibrillation</li> <li>▪ Asynchronous pacing</li> <li>▪ Inhibition of pacing therapy</li> <li>▪ Inappropriate shock therapy</li> </ul>	<ul style="list-style-type: none"> <li>▪ Deactivate tachy therapy.                             <ul style="list-style-type: none"> <li>➢ Program the device Tachy Mode <b>Electrocautery Protection Mode</b> or to <b>Off-Electrocautery</b>, if available. In this mode, tachyarrhythmia detection and therapy features are deactivated, and the pacing mode switches to an asynchronous mode (VOO, AOO, or DOO).</li> </ul> </li> <li>or</li> <li>➢ Program the device Tachy Mode to <b>Off</b>, or place a magnet over the device to temporarily inhibit or deactivate tachy therapy.<sup>a</sup> The brady pacing mode remains as programmed.</li> </ul>
Pacemakers <sup>b</sup> & CRT-Ps	<ul style="list-style-type: none"> <li>▪ Induce ventricular arrhythmias and/or fibrillation</li> <li>▪ Asynchronous pacing</li> <li>▪ Inhibition of pacing therapy</li> <li>▪ Trigger the EOL indicator</li> <li>▪ Electrical reset</li> </ul>	<ul style="list-style-type: none"> <li>▪ A magnet can be placed over the device to pace asynchronously at the magnet rate.<sup>c</sup></li> <li>or</li> <li>▪ The device can be programmed to an asynchronous pacing mode (VOO, AOO, or DOO).</li> </ul>

<sup>a</sup>Use of a magnet depends on feature availability and device programming. For additional information, refer to the **A Closer Look** articles entitled *Using a Magnet to Suspend or Deactivate Tachy Therapy in ICDs and CRT-Ds* and *Programming a Boston Scientific Defibrillator to Inhibit Tachy Therapy Using a Magnet*

<sup>b</sup>VIGOR<sup>®</sup> pacemakers at or near replacement time may experience prolonged pacing pauses during or immediately following the use of electrocautery near the device or leads.

<sup>c</sup>The following Intermedics pacemakers remain in magnet mode for only 64 full pacing cycles: COSMOS, DART, DASH, GALAXY, MARATHON, MOMENTUM<sup>®</sup>, NOVA, QUANTUM<sup>®</sup> II/III, RELAY, STRIDE<sup>®</sup>, SUPRIMA, and UNITY.

**If electrocautery cannot be avoided, follow the precautions listed below:**

- Prepare/program the pulse generator appropriately for the use of electrocautery (see Table).
- Monitor the patient and have temporary pacing equipment, external defibrillation equipment, and knowledgeable medical personnel available.
- Avoid direct contact between the electrocautery probe and the pulse generator or leads.
- Position the ground plate so that the current pathway does not pass through or near the implanted pulse generator system.
- Use short, intermittent, and irregular bursts at the lowest feasible energy levels.
- Use a bipolar electrocautery system whenever possible.
- If any programming changes were made, the pulse generator should be reprogrammed back to the desired settings following the procedure. **Remember to reactivate the Tachy Mode on ICDs and CRT-Ds.**