Arc Welding and Implanted Medical Devices

SUMMARY

Electromagnetic Interference (EMI) is the disruption of normal operation of an electronic device when it is in the vicinity of an electromagnetic field created by another electronic device.

Electric arc welding refers to a process that uses a power supply to create an electric arc between two metals.

This article describes the potential interaction between the arc welder and Boston Scientific implantable pacemakers and defibrillators. It also provides suggestions to minimize potential interactions.

Products Referenced

All CRM ICDs, S-ICDs, CRT-Ds, CRT-Ps, and Pacing Systems

For comprehensive information on device operation, reference the full instructions for use found at: **www.bostonscientific-elabeling.com**.

CAUTION: Law restricts this device to sale by or on the order of a physician. Indications, contraindications, precautions and warnings can be found with product labeling supplied with each device. Products referenced herein may not be approved in all geographies.Information is for the use in countries with applicable Health Authority product registrations.

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CRT-D: Cardiac Resynchronization Therapy Defibrillator
CRT-P: Cardiac Resynchronization Therapy Pacemaker
ICD: Implantable Cardioverter Defibrillator
S-ICD: Subcutaneous Implantable Defibrillator

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Description

The electrical signals generated by arc welders may interfere with the proper function of ICDs, S-ICDs, CRT-Ds, CRT-Ps or pacing systems. This interference may have the potential to be interpreted by the device as electrical noise or as electrical activity of the heart. Such interference may result in temporary asynchronous pacing (loss of coordination between the heart and the device), inhibition of pacing and/or shock therapy (therapy not delivered when required), or inappropriate tachyarrhythmia therapy (therapy delivered when not required). This article refers to Gas Metal Arc Welding—including Metal Inert Gas (MIG) and Metal Active Gas (MAG)—Manual Metal Arc (MMA),Tungsten Inert Gas (TIG) welding, and plasma cutting. For questions regarding inductive or spot welding, or welding using current greater than 160 amps, please contact Technical Services.

Potential EMI interactions

Electromagnetic interference (EMI) may occur when electromagnetic waves from one electronic device interfere with the operation of another electronic device. Electromagnetic waves of sufficient amplitude, pulse width, and/or frequency, generated within the proximity of an implanted pacemaker or defibrillator may result in unnecessary shock therapy or inhibition of pacing therapy when needed.

Arc Welding considerations

Should arc welding be performed, Boston Scientific recommends that patients maintain a distance of 24 inches (60 centimeters) between their implanted device and the arc welding equipment (i.e., the power supply, cabling, and the arc). If symptoms of faintness, dizziness, nausea, shocks etc. are felt, stop immediately and step away from the area or turn off the equipment. The risk of interference is minimized by using the lowest current setting possible.

Other arc welding considerations include, but are not limited to:

- Strictly follow the safety precautions mentioned in the welder manual.
- Work in a dry area. Wear dry, electrically insulated gloves and dry shoes.
- Keep all cables straight, close together, and extending away from the body. Do not coil cables.
- Arrange the work area so that the handle and rod will not contact the metal being welded.
- Use short, intermittent, and irregular bursts at the lowest feasible energy levels; wait several seconds between welds. Do not weld with rapidly repeating short bursts, as they are more likely to be interpreted as electrical activity of the heart.
- Ensure all equipment is properly grounded and is in proper working condition.
- Limit welding currents to less than 160 Amps.