



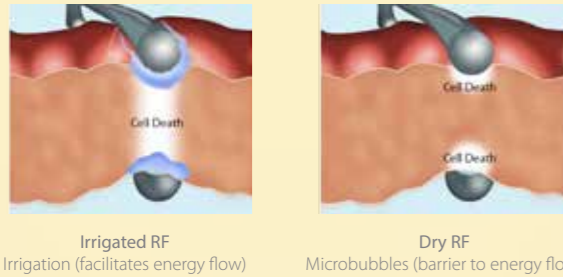
## Cardioblade® iRF

Irrigated Radiofrequency Surgical Ablation System

- Quick lesions that consistently achieve conduction block<sup>1</sup>
- Bipolar algorithm customizes energy and confirms transmurali<sup>2</sup>
- One system for both beating and arrested heart procedures
- Options for both sternotomy and MICS procedures

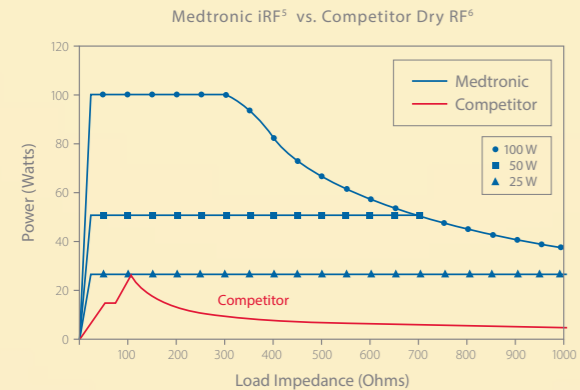
### iRF vs. Dry RF

#### Irrigated RF Energy Produces Deeper Lesions<sup>3,4</sup>



### RF From a More Capable Generator

#### Consistent Power in the Presence of Higher Impedance



# With **One** Comprehensive Surgical Ablation Source, Your Choice is Clear.

Cardioblade is the innovative and comprehensive surgical ablation portfolio powered by superior energy sources offering devices that put surgeons in control of every procedure with malleability that conforms to any anatomy.

To learn more about Cardioblade surgical ablation solutions, please contact your Medtronic representative.



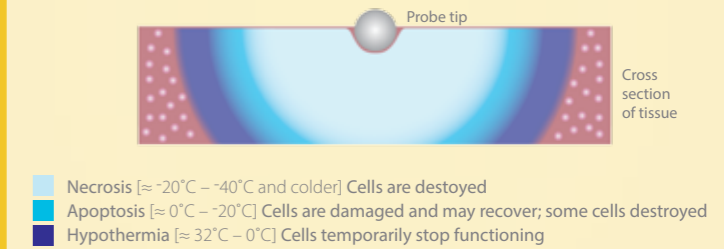
## Cardioblade® CryoFlex™

Argon-powered Surgical Ablation System

- Added safety on vulnerable tissue structures<sup>7</sup>
- Reproducibility of transmural lesions
- Facilitates single, right thoracotomy procedures
- Single malleable probe for all procedures

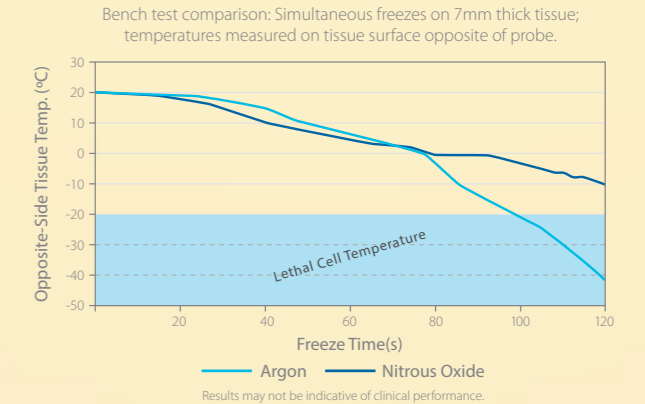
### Levels of Cell Death<sup>8,9,10,11</sup>

#### Effective Cryoablation Achieves Necrotic Cell Temperatures Through Targeted Tissue



### Argon vs. Nitrous Oxide

#### Argon Freezes to Lethal Cell Temperatures Deeper and Faster<sup>12</sup>





# Cardioblade®

SURGICAL ABLATION SYSTEMS



## References

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11. Gage AA, Baust J. Review Mechanisms of Tissue Injury in Cryosurgery. *Cryobiology* Vol. 37; pp. 171-86. State University of New York, Binghamton, NY. ©1998 Academic Press.
12. Medtronic in vitro test data on file. Bench test comparison between Cardioblade® CryoFlex™ probe to AtriCure Cryo 1™ probe on 7mm thick porcine tissue. Both devices performed simultaneous freeze upon tissue, while recording temperatures on the surface opposite of probes.

### LP and BP2 (Bipolar Clamp)

**Indications for Use:** is intended to ablate cardiac tissue during cardiac surgery using radiofrequency energy.

**Contraindications:** The Cardioblade LP and BP2 Surgical Ablation Device should not be used for:

- Patients that have active endocarditis at the time of surgery
- Ablation in a pool of blood (e.g., through a purse string suture on a beating heart). Effects of this type of ablation are unknown.

### Gemini

**Indications for Use:** is intended to ablate cardiac tissue during cardiac surgery using radiofrequency energy.

**Contraindications:** The Cardioblade Gemini Surgical Ablation Device should not be used for:

- Patients that have active endocarditis at the time of surgery
- Ablation in a pool of blood (e.g., through a purse string suture on a beating heart). Effects of this type of ablation are unknown.

### Pen/XL Pen

**Indications for Use:** is intended to ablate cardiac tissue during cardiac surgery using radiofrequency energy.

**Contraindications:** The Cardioblade Surgical Ablation Pen should not be used for patients that have active endocarditis at the time of surgery.

### MAPS

**Indications for Use:** The Cardioblade® MAPS Surgical Mapping, Ablation, Pacing, and Sensing Device is a sterile, single use electrosurgery device intended to ablate cardiac tissue using radiofrequency energy when connected to the Cardioblade® 68000 Generator or for temporary cardiac pacing, sensing, recording, and stimulation during the evaluation of cardiac arrhythmias during surgery when connected to an external temporary cardiac pacemaker. **Contraindications:** The Cardioblade MAPS Mapping, Ablation, Pacing and Sensing Device should not be used for patients that have active endocarditis at the time of surgery.

### Cardioblade® 68000 IRF Generator

The Cardioblade® Surgical Ablation System is intended to ablate cardiac tissue during cardiac surgery using radiofrequency energy. To avoid the risk of electrical shock and/or burns to the patient, do not touch the patient while touching the outer housing or connections on the Cardioblade generator. Do not allow the patient to come into contact with the grounded metal surfaces during RF energy delivery. Caution: Federal law (USA) restricts this device to sale by or on the order of a physician. For a complete listing of all indications, contraindications, precautions and warnings, please refer to the Instructions for Use which accompany each product.

**Potential Complications:** Possible complications related to the ablation of cardiac tissue in combination with open heart surgery are tissue perforation, extension of extracorporeal bypass, perioperative heart rhythm disturbances (atrial and/or ventricular), postoperative embolic complications, pericardial effusion or tamponade, injury to the great vessels, valve leaflet damage, conduction disturbances (SA/AV node), acute ischemic myocardial event, thrombus formation. Refer to Instructions for Use which accompany each product.

### The Cardioblade CryoFlex Surgical Ablation System

**Indications for Use:** is intended for minimally invasive cardiac surgical procedures, including the treatment of cardiac arrhythmias.

The Cardioblade CryoFlex 7cm, 10cm, and 10-S probes plus the Cardioblade CryoFlex Clamp and Cardioblade CryoFlex Surgical Ablation Console freeze target tissue and block the electrical conduction pathways by creating an inflammatory response and cryonecrosis.

**Contraindications:** The Cardioblade CryoFlex Surgical Ablation Probe is not designed for use inside a beating heart.

**Adverse Events or Complications:** Potential adverse events with this device are similar to other cardiac surgery procedures and may include the following: Bleeding; re-operation; extension of extracorporeal bypass; heart rhythm disturbances (atrial and/or ventricular); effusion; pericarditis; cardiac tamponade; pleural effusion; mediastinitis; conduction disturbances (SA/AV node); acute ischemic myocardial event; thrombus formation; low cardiac output; stroke; renal, gastrointestinal or respiratory complications; sepsis; adjacent structural damage; and death.

• Avoid contact between the cryoablation probe and the phrenic nerve to avoid injury. Perioperative heart rhythm disturbances (atrial and/or ventricular)

• Cryoablation involving coronary vessels has been associated with subsequent clinically significant arterial stenosis. It is unknown whether Cryoablation with the Cardioblade CryoFlex Surgical Ablation Probe will have such an effect, but as in all such procedures, care should be taken to minimize unnecessary contact with coronary vessels during Cryoablation.

For a complete listing of all indications, contraindications, precautions and warnings, please refer to the Instructions for Use which accompany each product.

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