

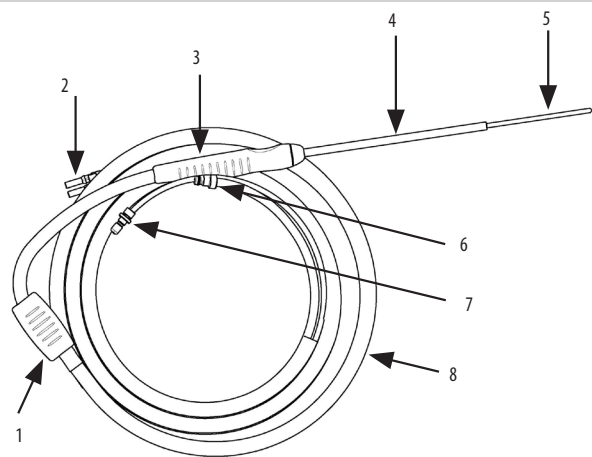
## cryoICE® cryoFORM® Cryoablation Probe Instructions for Use

# CRYOF

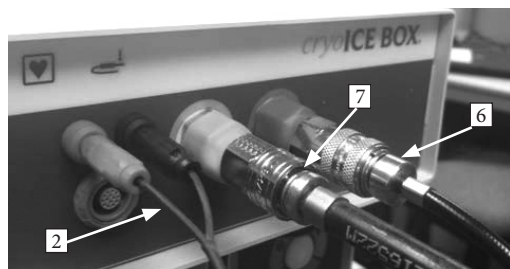
MD

**Caution:** Federal Law (US) restricts this device to sale by or on the order of a physician

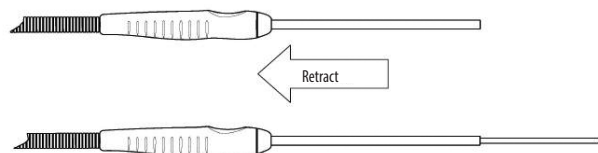
**FIGURE 1 cryoICE cryoFORM CRYO ABLATION PROBE**



**FIGURE 2 PROBE CONNECTIONS TO ACM**



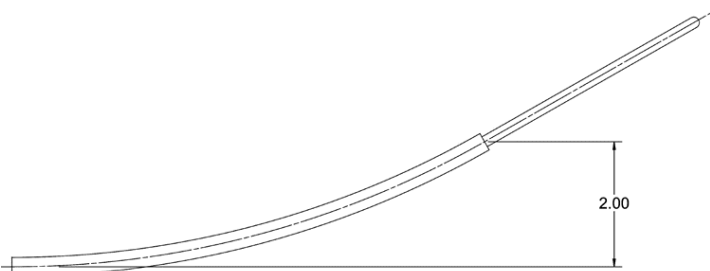
**FIGURE 3 PROBE RETRACTION**



**FIGURE 4 ACM OPERATING MODES**



**FIGURE 5 RECOMMENDED RIGID PROBE SHAFT BENDING**



### INDICATION FOR USE

The cryoICE cryoFORM cryoablation probe is indicated for use in the cryosurgical treatment of cardiac arrhythmias by freezing target tissues, creating an inflammatory response (cryonecrosis) that blocks the electrical conduction pathway.

### CONTRAINDICATIONS

There are no known contraindications.

### PATIENT POPULATION

The cryoICE cryoFORM cryoablation probe is designed for use in adults (18 years+).

### SYSTEM DESCRIPTION

The AtriCure cryoICE cryoFORM cryoablation probe creates cryoablation lesions in tissue by delivering a cryogenic Nitrous Oxide (N<sub>2</sub>O) energy source from the console to the tip of the connected probe. The system provides controlled lesion forming temperatures that are below -40°C (-40°F).

The system is comprised of the following components:

1. Single-use cryoICE cryoFORM cryoablation probe (referred to hereafter as PROBE).
2. AtriCure cryoICE BOX (referred to hereafter as CONSOLE).
3. AtriCure cryoICE BOX components and N<sub>2</sub>O gas cylinder (not provided).

### PRODUCT DESCRIPTION

The PROBE is a single-use device.

### ENVIRONMENTAL SPECIFICATIONS

Operational	Storage	Transit
Temperature: 10°C/50°F to 40°C/104°F	Temperature: -29°C/-20°F to 60°C/140°F	Temperature: -29°C/-20°F to 60°C/140°F
Relative Humidity: 15% to 90%	Relative Humidity: 30% to 85%	Relative Humidity: 30% to 85%
Atmospheric Pressure: 98 to 105kPA (14.2 to 15.2 psi)	Atmospheric Pressure: 98 to 105kPA (14.2 to 15.2 psi)	Atmospheric Pressure: N/A

### PACKAGE CONTENTS

1. One (1) PROBE

The PROBE is supplied STERILE and NON-PYROGENIC in unopened, undamaged packaging. For single use only, do not re-sterilize and do not re-use.

### NOMENCLATURE

This instruction refers to features of the PROBE as follows (see Figure 1):

### PROBE FEATURES

- |                            |                                |
|----------------------------|--------------------------------|
| [1] Manifold               | [5] Malleable Section of PROBE |
| [2] Temperature Connectors | [6] Gas Inlet Connector        |
| [3] Retractable Handle     | [7] Gas Exhaust Connector      |
| [4] Rigid PROBE Shaft      | [8] Tubing                     |

### WARNING

Carefully read ALL instructions PRIOR to use. Failure to follow these instructions, warnings, and cautions may lead to device damage and/or patient injury.

Carefully read ALL instructions PRIOR to use. Failure to follow CryoICE Box (ACM) Console Warnings, Cautions, product description, flow rates, and features may lead to device damage and/or patient injury.

Use of the PROBE should be limited to properly trained and qualified medical personnel. Failure to provide intended therapy and/or serious injury could occur with improper use of this device.

The ACM components are not suitable for use in the presence of a flammable anesthetic mixture which can cause a fire or explosion, resulting in user and patient injury or death.

Care should be exercised in patients with suspected or known allergies or hypersensitivity to nickel, which is present in small quantities in cryoICE cryoFORM probe.

The cryoICE cryoFORM probe contains a small fraction of cobalt which is considered a substance of concern.

### DEVICE USE INSTRUCTIONS

#### SETTING UP THE SYSTEM

**CAUTION:** The PROBE is only compatible with the AtriCure cryoICE BOX. Do not use the PROBE with any other system, to prevent injury and/or equipment damage.

**CAUTION:** Do not restrict, kink, clamp, or otherwise damage the Malleable Section of PROBE or Tubing, as this may interrupt the gas supply path, preventing the PROBE from properly freezing and/or defrosting.

**CAUTION:** Follow standard guidelines for the safe handling and storage of high-pressure gas tanks.

**CAUTION:** Nitrous Oxide gas must be safely exhausted. Follow standard hospital guidelines for allowable concentration levels.

1. Install and power on the CONSOLE and required components. The instructions for installing and operating the CONSOLE, as well as a technical description of the system, are detailed in the cryoICE BOX™ User's Manual.
2. Turn the N<sub>2</sub>O Cylinder tank valve fully counter-clockwise to open. Verify pressure is at least 4826 kPa (700 psi) after the appropriate warming period.
3. Examine the device packaging to ensure the sterility of the product has not been compromised. Remove the PROBE from the package per standard sterile technique.

### WARNING

If the sterile package is dropped and/or damaged or the sterile barrier is breached, discard device and DO NOT USE. Breach of sterile barrier can lead to infection.

**CAUTION:** Ensure the CONSOLE is in READY Mode before attempting to connect the PROBE. The sudden release of pressurized gas may cause the PROBE to recoil, which may injure the operator or patient.

4. With the CONSOLE in READY Mode (see Figure 4), connect the PROBE Connectors to the CONSOLE Ports as follows (see Figure 2):

- a) Insert the blue Gas Inlet Connector into the blue Inlet Port.
- b) While pushing back the locking sleeve on the orange Exhaust Port, insert the orange Gas Exhaust Connector, then release the locking sleeve.
- c) Verify the Gas Inlet and Exhaust connectors are engaged by gently tugging on the hose connectors.
- d) Insert the red and black Thermocouple Connectors into the same-colored Thermocouple Ports.

**NOTE:** When connected correctly, the ACM will display current PROBE temperature. If not connected, the ACM will display ---.

#### FORMING THE MALLEABLE SECTION OF THE PROBE TO THE DESIRED SHAPE

**NOTE:** Use steady, firm pressure while forming rather than quick, intense force.

### WARNING

Do not bend Malleable Section of the PROBE during FREEZE or DEFROST mode. It can cause a high pressurized gas leak that can potentially lead to tissue perforation, unintended damage, or injury to user.

**CAUTION:** Discontinue use immediately if a breach in the PROBE is suspected, to avoid the release of pressurized N<sub>2</sub>O gas and injury to the patient or user.

5. Prior to forming, ensure the CONSOLE is in READY Mode per Figure 4.
6. Retract the PROBE handle and rigid PROBE shaft to expose Malleable Section of PROBE. See Figure 3: Handle and Rigid PROBE Shaft Retraction.

**CAUTION:** The Malleable Section of PROBE has a limited functional life; if greater than 4 bends are intended, it is recommended to use a second probe.

#### FORMING THE RIGID PROBE SHAFT

**CAUTION:** The distal end of the Rigid PROBE Shaft should not be bent more than 5 cm (2.0 inches) from straight, as illustrated in Figure 5.

**CAUTION:** Do not use the PROBE if damaged as it may result in device malfunction. Repetitive bends in the same location could cause damage to the Rigid PROBE Shaft. The PROBE has a limited functional life; if greater than 7 Rigid Probe Shaft bend cycles are intended, it is recommended to use a second probe.

#### USING THE PROBE TO PERFORM CRYOABLATION

**NOTE:** The PROBE ablates tissue via cryogenic energy delivered to the Malleable Section of PROBE. Cryoadhesion of the Malleable Section of PROBE to tissue can occur when the PROBE reaches a temperature of 0°C (32°F) or below. Other portions of the PROBE, including the Rigid PROBE Shaft, can become cold, and should be handled with appropriate care.

**CAUTION:** Do not use the PROBE if damaged as it may result in device malfunction. The PROBE has a limited functional life; if greater than 7 Freeze/Defrost cycles are intended, it is recommended to use a second probe.

7. With the PROBE in air, prime the system with a Pre-Freeze cycle: Set the CONSOLE Ablation Timer to 30 seconds and press the Activation Button to engage FREEZE Mode. Wait for the system to cycle through FREEZE and DEFROST, or manually advance via the Activation Button.
8. During the FREEZE cycle, if there are leaks in the blue inlet/orange exhaust connector, the sound of gas leaking will be heard and/or frost will appear on the connections. Replace the device before continuing with the procedure.

### WARNING

Ensure the CONSOLE is in READY Mode and the PROBE temperature is above 0°C (32°F) before contacting tissue, to avoid unintended cryoadhesion.

9. Set the Ablation Timer to the desired ablation time. The timer is generally set to a default of 120 seconds.
10. Navigate the PROBE to the target ablation site:

- a) Identify the target site.
- b) Reach the Malleable Section of PROBE through an appropriate-sized incision to the target.
- c) Under direct visualization, place the Malleable Section of PROBE against the target tissue.

### WARNING

Do not use excessive force when using the PROBE to avoid tissue damage.

Do not use the PROBE to freeze tissue inside the beating heart. Use of the PROBE to freeze tissue inside the beating heart may result in severe injury to the patient.

Cardiac surgical procedures may mechanically induce arrhythmias.

Cryo-ablation involving coronary vessels has been associated with subsequent clinically significant arterial stenosis. It is unknown whether cryo-ablation with the PROBE will have such an effect, but as in all such procedures, care should be taken to minimize unnecessary contact with coronary vessels during cryo-ablation.

11. Using the Retractable Handle, apply gentle pressure to the Malleable Section of PROBE, and avoid any PROBE movement until after the freeze cycle completes.
12. Under direct visualization, ensure that the PROBE Malleable Section of PROBE and Rigid PROBE Shaft are not in contact with other anatomical structures not intended for ablation.

### WARNING

Before entering Freeze Mode, always confirm the placement of the Malleable Section of PROBE is as desired and there is no undesired tissue contact with the Malleable Section of PROBE or Rigid PROBE Shaft, to prevent unintended cryoadhesion and/or cryoablation.

13. Press the activation button or use the optional ACM footswitch to engage FREEZE Mode for the desired length of time. The system will automatically cycle from FREEZE to DEFROST after the Ablation Timer has expired.

### WARNING

Use care to avoid PROBE movement while cryoadhesion is present, to prevent inadvertent tissue damage.

14. Wait until the PROBE temperature has warmed to above 0°C (32°F) before attempting to remove the Malleable Section of PROBE from the ablation site or moving the Rigid PROBE Shaft.

**CAUTION:** Use care while the CONSOLE is in DEFROST Mode, as during N<sub>2</sub>O gas venting, the PROBE may cool sufficiently to cause cryoadhesion.

**NOTE:** If PROBE does not reach desired DEFROST temperature, apply warm, sterile, saline to the tissue and PROBE area as necessary.

15. After the CONSOLE is in Ready Mode and the PROBE temperature is above 0°C (32°F), repeat steps (11) to (14) to create additional cryoablation lesions.

#### DISCONNECTING AND DISPOSING OF THE PROBE

16. Close N<sub>2</sub>O Cylinder by turning the Valve fully clockwise.

17. Pull the red N<sub>2</sub>O Manual Exhaust Knob or press the N<sub>2</sub>O Exhaust Switch on the back of the CONSOLE to fully depressurize the system.

**CAUTION:** Ensure the CONSOLE is in Ready Mode before attempting to disconnect the PROBE. The sudden release of pressurized gas may cause the PROBE to recoil, which may injure the operator or patient.

18. Disconnect the PROBE from the CONSOLE and discard.

### WARNING

FOR SINGLE USE ONLY. DO NOT reuse, reprocess or resterilize. Reuse, reprocessing or resterilization may compromise the structural integrity of the device and/or lead to device failure, which in turn may result in patient injury, illness or death. Reuse, reprocessing or resterilization may also create a risk of contamination of the device and/or cause patient infection or cross-infection, including, but not limited to, the transmission of infectious disease(s) from one patient to another. Contamination of the device may lead to injury, illness or death of the patient.

#### DISPOSAL

After use this device should be treated as medical waste and disposed of following hospital protocol.

#### RETURN OF USED PRODUCT

If for any reason this product must be returned to AtriCure, Inc., a return goods authorization (RGA) number is required from AtriCure, Inc., prior to shipping. If the product has been in contact with blood or body fluids, it must be thoroughly cleaned and disinfected before packing. It should be shipped in either the original carton or an equivalent carton, to prevent damage during shipment; and it should be properly labeled with an RGA number and an indication of the biohazardous nature of the contents of shipment. Instructions for cleaning and materials, including appropriate shipping containers, proper labeling, and an RGA number may be obtained from AtriCure, Inc.

#### DISCLAIMER STATEMENTS

Users assume responsibility for approving the acceptable condition of this product before it is used, and for ensuring that the product is only used in the manner described in these instructions for use, including, but not limited to, ensuring that the product is not re-used.

Under no circumstances will AtriCure, Inc. be responsible for any incidental, special or consequential loss, damage, or expense, which is the result of the deliberate misuse or re-use of this product, including any loss, damage, or expense which is related to personal injury or damage to property.

#### TROUBLESHOOTING

PROBLEM	POTENTIAL CAUSE	SOLUTION
PROBE does not reach desired defrost temperature after freeze.	Plugged gas supply path.	Apply warm saline to tissue and probe as necessary.
PROBE does not reach the proper temperature.	Empty or low N <sub>2</sub> O cylinder.	Replace low or empty N <sub>2</sub> O cylinder.
	Gas not flowing, tubing is restricted.	Verify PROBE tubing is not pinched.
	Gas leak in PROBE Shaft or tubing.	Replace PROBE.
	N <sub>2</sub> O tank valve closed.	Fully open N <sub>2</sub> O tank valve.
CONSOLE displays "---".	Thermocouple Connectors not fully plugged into the CONSOLE.	Plug Thermocouple Connectors all the way into the CONSOLE ports.
	PROBE internal wires are broken.	Replace PROBE.
CONSOLE reads positive temperature during ablation.	Thermocouple Connectors are plugged in reversed (red-to-black).	Plug Thermocouple Connectors into the matching colored CONSOLE Ports.
CONSOLE displays fault code, error code, maintenance needed, or low cylinder pressure light.	See CONSOLE User's Manual.	

