FIND YOUR
IDEAL
CARDIOPLEGIA CANNULAE

DELIVERING MYOCARDIAL PROTECTION
FINDING THE RIGHT CANNULAE

You’re facing a nearly endless range of procedural scenarios and ever-increasing variability in the operating room, requiring sets of cardioplegia cannulae which offer incredible breadth and depth. More than ever, your cardiovascular team is tasked with delivering a high level of myocardial protection for standard and minimally invasive cases.
FINDING THE RIGHT CARDIOPLEGIA SCHEME

Whether a continuous or intermittent cardioplegia approach, or a cold, warm or normothermic delivery, your cannulation scheme includes many considerations.

By accessing the largest portfolio of cardioplegia cannulae today, your decisions can be based on more options—so you can treat more patients.

At Medtronic, we’re working for you, bringing you the tools and technologies that you’ve asked for—find your ideal cardioplegia cannulae today.
FIND YOUR IDEAL SOLUTION FOR STANDARD CASES

Your standard case is anything but standard—and we know it. Medtronic offers the largest portfolio of cardioplegia cannulae to treat your patients as they present with ever varying disease states and anatomies.

ANTEGRADE

DLP™ High Flow Coronary Artery Ostial Cannulae

Hand-held or clamped placement options allow infusion directly into the coronary arteries. Clinical settings may include, AVR, ascending aortic arch resection or other surgical procedures where the ascending aortic arch is incised.

ANTEGRADE

DLP™ Silicone Coronary Artery Ostial Cannulae

Intracoronary application offers an alternate cannulation strategy and improves visualization of the aortic root.

ANTEGRADE

DLP™ Dual Lumen Aortic Root Cannulae with Vent Line

Dual lumen tip with vent line allows simultaneous administration of cardioplegia delivery and left heart venting — so, there’s no need to discontinue cardioplegia delivery while aspirating air.

DLP™ Silicone RCSP Cannulae with Elongated Manual-Inflate Cuff

RETOGRADE

The elongated balloon limits a shunting effect

Clinical studies suggest that standard coronary sinus perfusion techniques allow a portion of the retrograde cardioplegia to be shunted away from the capillary vessels, depriving them of nutritive cardioplegia flow. By using a cannulae with an elongated balloon to block the middle cardiac vein (through which the undesired shunting takes place), cardioplegia is directed to the capillary beds, providing for improved myocardial distribution in the free wall of the left ventricle and a more uniform temperature gradient.

Important Safety Information

For a listing of indications, contraindications, precautions and warnings, please refer to the Instructions for Use. Care and caution should be taken to avoid damage to vessels and cardiac tissue during cannulation or other cardiac surgery procedures. Care and caution should be taken when inserting the needle to prevent perforation of the back wall of the aorta. Extreme caution should be exercised while introducing the cannula into the coronary sinus as this may cause vessel damage. Caution: Federal law (USA) restricts this device to sale by or on the order of a physician.
MAXIMIZE PROTECTION FOR YOUR MINIMALLY INVASIVE CASES

Just because your operation is minimally invasive, doesn’t mean you should provide less protection. Complex MICS procedures and those with anticipated longer cross clamp times do require enhanced myocardial protection. Medtronic provides options specifically designed to help you maneuver in your minimally invasive incisions.

ANTEGRADE

**MiAR™ Cannulae (Minimally Invasive Aortic Root)**

Notably long, at 12.25 inches—and just right for facilitating placement through a mini-sternotomy or right thoracotomy. The MiAR maintains hemostasis and allows retraction of the needle point into a rigid fitting after placement of the cannulae.

RETROGRADE

**MiRCSP™ Cannulae (Minimally Invasive Coronary Sinus Perfusion)**

Provides enhanced visibility and maneuverability to aid insertion in MICS procedures where a standard retrograde cannula is difficult to insert.

When you’re making important decisions, keep in mind that the basic tenets of myocardial protection apply to both standard and MICS procedures.

Important Safety Information

Extreme caution should be exercised while introducing the cannulae into the coronary sinus. Do not force the cannulae into the coronary sinus as this may cause vessel damage. Additional care and caution may be necessary due to the unique adaptations required for minimally invasive techniques. Due to limitations of direct visualization during minimally invasive techniques, echocardiographic or fluoroscopic imaging is recommended. Care and caution should be taken to avoid damage to vessels and cardiac tissue during cannulation or other cardiac surgery procedures. Caution: Federal law (USA) restricts this device to sale by or on the order of a physician.
Continuous retrograde cardioplegia is particularly useful for coronary reoperations and provides adequate myocardial protection when combined with antegrade delivery.\textsuperscript{10}

The simultaneous technique of combined cardioplegia keeps the heart decompressed and vented, washes atheroemboli from veins and arteries, and provides uniform myocardial protection.\textsuperscript{10} Clinical discovery can help you look across the many options available. There may be more than one way, indeed.

Antegrade and retrograde cardioplegia work together to protect the heart in more than one way.\textsuperscript{3, 7, 11}
DLP™ Silicone RCSP Cannulae with Manual-Inflate Cuff

Silicone manual-inflate cuffs with pressure monitoring lines feature a smooth cuff for easy placement, or ridged cuff for enhanced retention. Choose from standard sized or elongated for enhanced retention and occlusion of middle cardiac vein.

DLP™ Silicone RCSP Cannulae with Auto-Inflate Cuff

Silicone auto-inflate cuffs offer the convenience of cuff inflation without the need for a syringe. The unique flow-through design allows cardioplegia to circulate through the cuff before exiting the cannula tip.

DLP™ Aortic Root Cannulae

Aortic root pressure monitoring and left heart venting. All DLP Aortic Root Cannulae can be used to aspirate emboli as well as to administer cardioplegia.

Important Safety Information

Care and caution should be taken when inserting the needle to prevent perforation of the back wall of the aorta. Care and caution should be taken to avoid damage to vessels and cardiac tissue during cannulation or other cardiac surgery procedures. Additional care and caution may be necessary due to the unique adaptations required for minimally invasive cardiac surgery. Extreme caution should be exercised while introducing the cannula into the coronary sinus. Do not force the cannula into the coronary sinus as this may cause vessel damage. Do not over inflate the balloon. Caution: Federal Law (USA) restricts this device to sale or on the order of a physician.

Using retrograde cardioplegia in conjunction with antegrade delivery conserves time and reduces mortality.7,8,9,10

“Simultaneous delivery revealed the most consistent results and the best perfusion of the anterior left ventricle and right ventricle in comparison to antegrade or retrograde routes.”6
# Antegrade Cannulae

## Ordering Information

### MiAR™ Cannulae
- **12.25 in (31 cm) overall length**
  - Flanged Standard Tip and Flow-Guard™ Introducer
    - 11012L: 12 ga (9 Fr) (10 per carton)
    - 11014L: 14 ga (7 Fr) (10 per carton)

### DLP™ Aortic Root Cannulae
- **2.5 in (6.4 cm) overall length**
  - Flanged Standard Tip and Standard Introducer
    - 10218: 18 ga (4 Fr) white tip and clear flange (20 per carton)
    - 12218: 18 ga (4 Fr) blue one-piece tip and flange (20 per carton)

### DLP™ Aortic Root Cannulae with Vent Line
- **5.5 in (14.0 cm) overall length**
  - Flanged Standard Tip and Standard Introducer
    - 20009: 9 ga (11 Fr) (20 per carton)
    - 20012: 12 ga (9 Fr) (20 per carton)
    - 20012S: 12 ga (9 Fr) with two clamps (20 per carton)
    - 20014: 14 ga (7 Fr) (20 per carton)
    - 20014L: 14 ga (7 Fr) with 8 in (20.3 cm) vent line (20 per carton)
  - Flow-Guard™ Introducer
    - 21012: 12 ga (9 Fr) (20 per carton)
    - 21014: 14 ga (7 Fr) (20 per carton)

### DLP™ Silicone Coronary Artery Ostial Cannulae
- **10 in (25.4 cm) overall length**
  - Flanged Pressure Monitoring Tip and Standard Introducer
    - 23009: 9 ga (11 Fr) (20 per carton)

### DLP™ Coronary Artery Ostial Cannulae
- **6 in (15.2 cm) overall length**
  - Basket Tip
    - 30010: 10 Fr (3.3 mm) (20 per carton)
    - 30012: 12 Fr (4.0 mm) (20 per carton)
    - 20014: 14 Fr (4.7 mm) (20 per carton)
  - Spherical Tip
    - 30011: 10 Fr (3.3 mm) (20 per carton)
  - Soft, Concave Tip
    - 30050: (10 per carton)
  - Soft, Convex Tip
    - 30055: (10 per carton)

### Antegrade Cannulae: Care should be taken when inserting the needle to prevent perforation of the back wall of the aorta. Care and caution should be taken to avoid damage to vessels and cardiac tissue during cannulation or other cardiac surgery procedures. Additional care and caution may be necessary due to the unique adaptations required for minimally invasive techniques. For a listing of indications, contraindications, precautions and warnings, please refer to the Instructions for Use. Caution: Federal law (USA) restricts this device to sale by or on the order of a physician.
**Retrograde Cannulae**

**Ordering Information**

Important Safety Information

Retrograde Cannulae: Extreme caution should be exercised while introducing the cannula into the coronary sinus. Do not force the cannula into the coronary sinus as this may cause vessel damage. Do not over inflate the balloon. Additional care and caution may be necessary due to the unique adaptations required for minimally invasive techniques. Due to limitations of direct visualization during minimally invasive techniques, echocardiographic or fluoroscopic imaging is recommended. Care and caution should be taken to avoid damage to vessels and cardiac tissue during cannulation or other cardiac surgery procedures. Caution: Federal law (USA) restricts this device to sale by or on the order of a physician.

### **MiRCS™ Cannulae**

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### **DLP™ Silicone RCSP Cannulae with Manual-Inflate Cuff**

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### **DLP™ Silicone RCSP Cannulae with Manual-Inflate Cuff (continued)**

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### **DLP™ PVC RCSP Cannulae with Auto-Inflate Cuff**

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For more information, contact your local Medtronic Cannula Products Representative.
U.S. Customer Service: 1 (800) 328-1357. Some products may not be available in all geographies.

References


4. Medtronic data on file


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