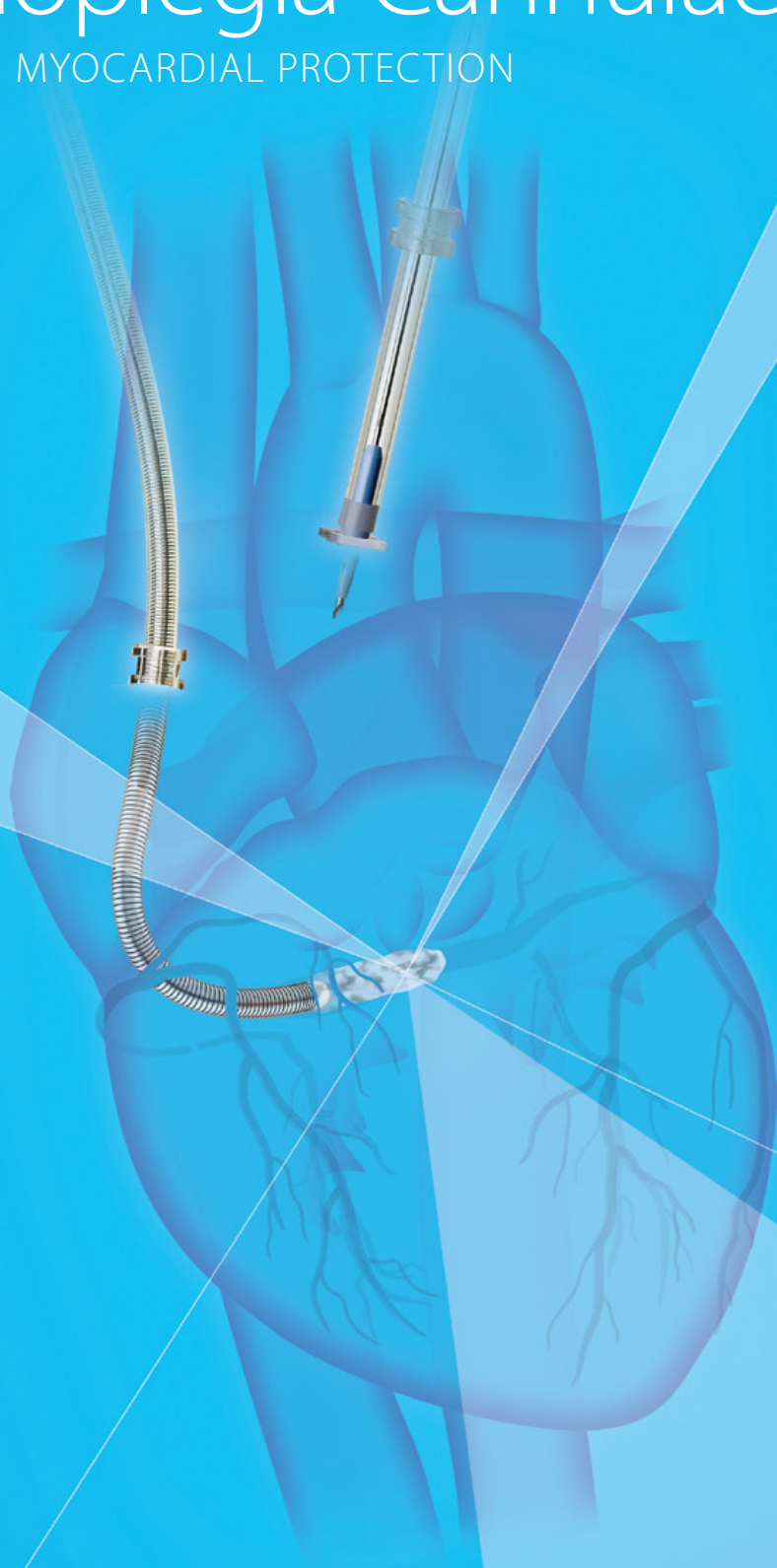




Cardioplegia Cannulae

DELIVERING MYOCARDIAL PROTECTION



Find your ideal.

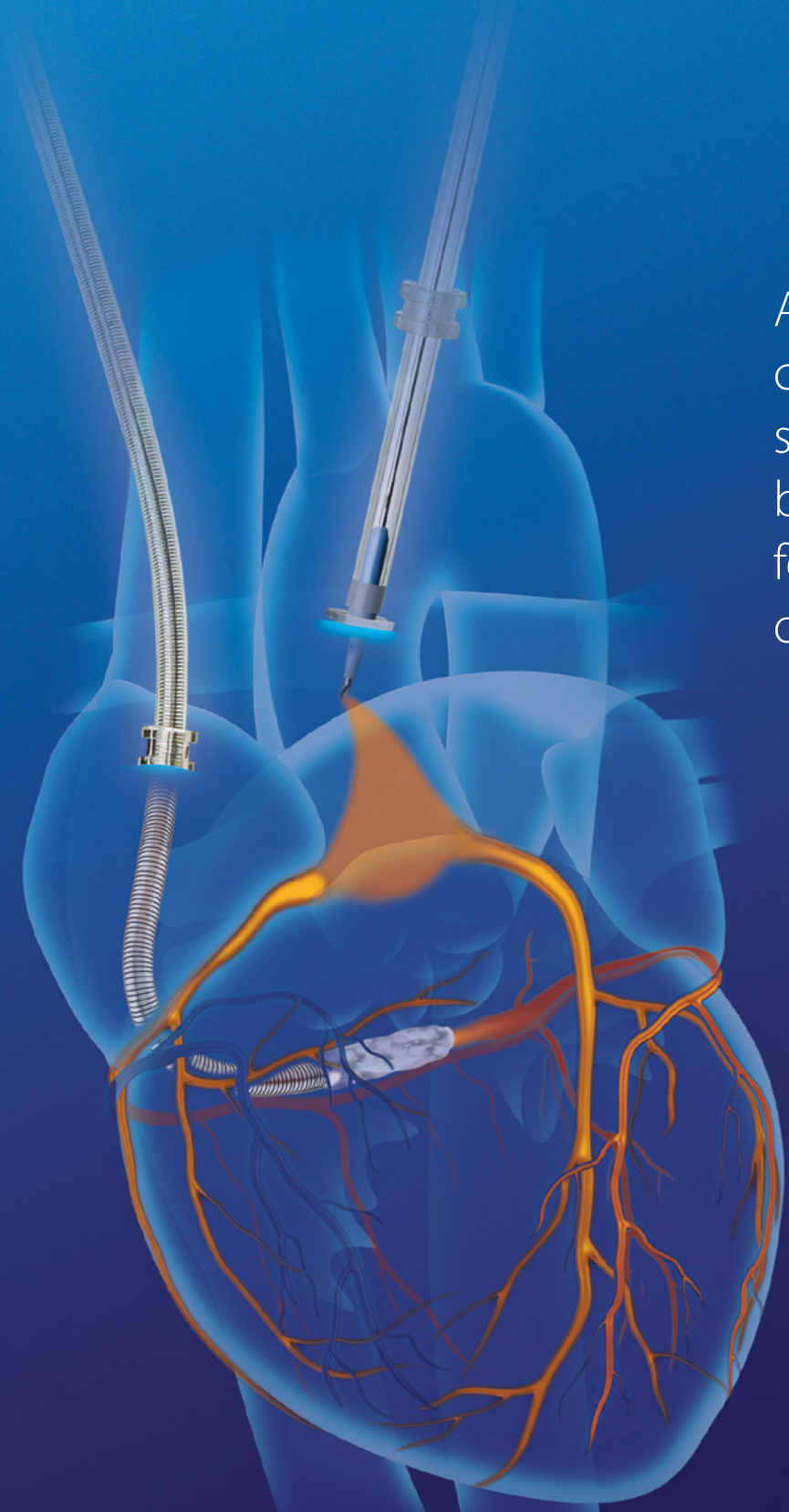
What is your ideal cardioplegia strategy?

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.

At Medtronic, we're working for you, bringing you the tools and technologies that you've asked for—find your ideal cardioplegia cannulae today.



An anatomical illustration of a human heart, rendered in a semi-transparent blue style to reveal internal structures. Two cannulae are shown: one is inserted into the aorta, and the other is inserted into the coronary artery system. The coronary arteries are highlighted in a bright orange color, showing their branching pattern across the surface of the heart. The background is a solid dark blue.

A specific
cannulation
scheme must
be created
for each
operation.¹

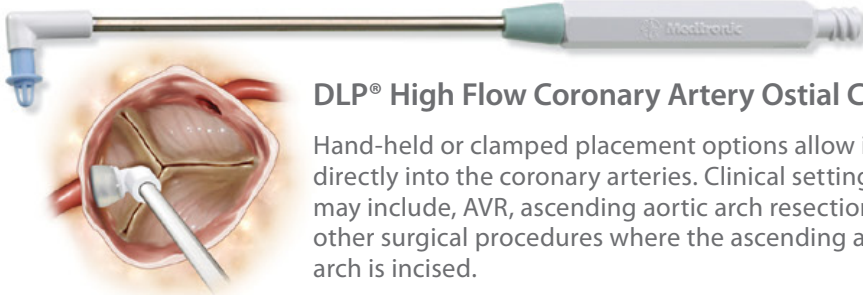
Consider all
your options. **Finding the right cardioplegia scheme.**

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.

A Variety of Solutions for Your 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

Infuse cardioplegia solutions into the aortic root or aspirate air from the aorta. Large bore cannula body provides high flow rates and the integral suture rings aid in retention. Vent line feature allows administration of cardioplegia and left heart venting.

DLP® Silicone RCSP Cannulae with Elongated Manual-Inflate Cuff



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.² 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.²

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.

Maximum 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.³ 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 maneuverability⁴ to aid insertion in MICS procedures where a standard retrograde cannula is difficult to insert.³

When you're making important decisions, keep in mind that the basic tenets of myocardial protection apply to both standard and MICS procedures.⁵

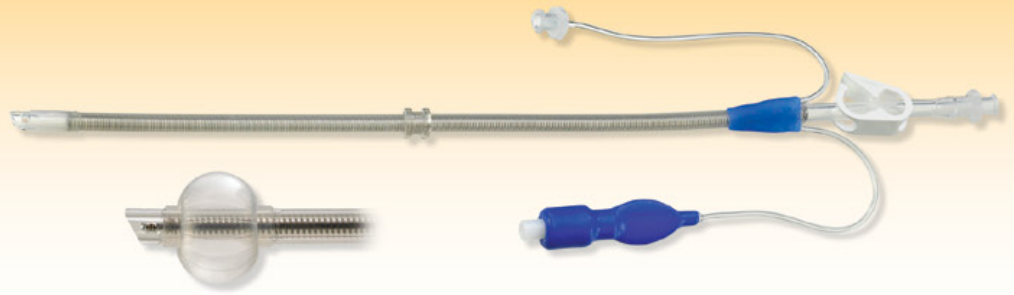
Important Safety Information

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.



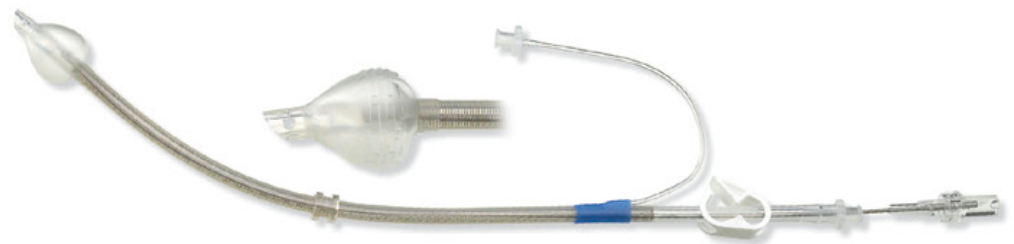
RETROGRADE

“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



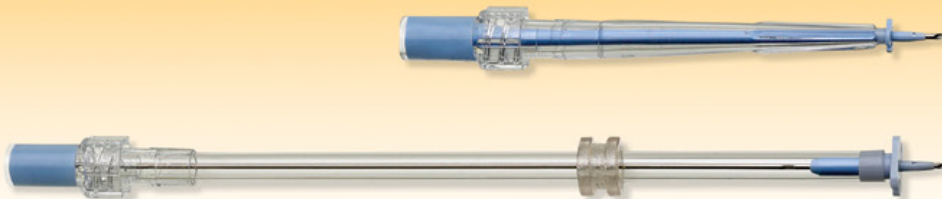
DLP® Silicone RCSP Cannulae with Manual-Inflate Cuff

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.



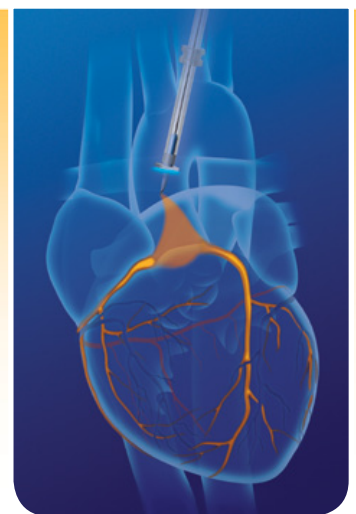
DLP® Silicone RCSP Cannulae with Auto-Inflate Cuff

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

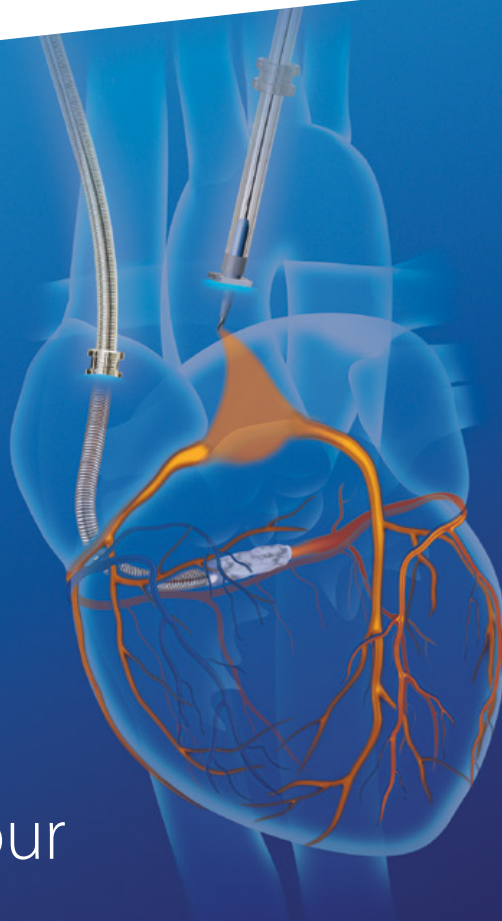
Aortic root pressure monitoring and left heart venting. All DLP Aortic Root Cannulae can be used to aspirate emboli as well as to administer cardioplegia.



ANTEGRADE

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}

Improve your myocardial protection.

Antegrade and retrograde cardioplegia work together to protect the heart in more than one way.^{3,7,11}

Continuous retrograde cardioplegia is particularly useful for coronary reoperations and provides adequate myocardial protection when combined with antegrade delivery.¹⁰

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

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. Please contact your local Medtronic Cannula Products Representative for product availability outside of the United States.

References

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<http://findyourideal.medtronic.com>

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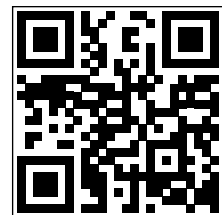
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cannulae portfolio.

