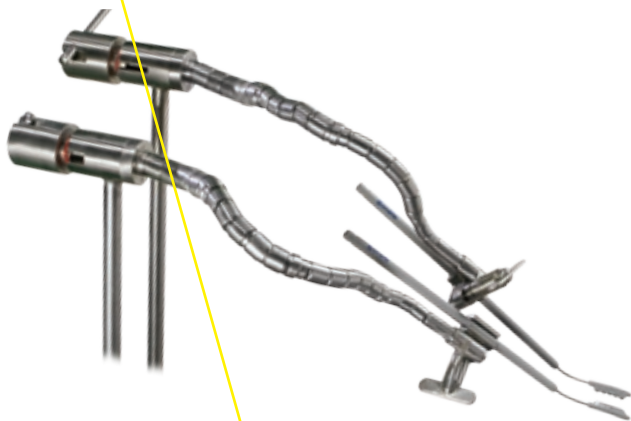




Beating Heart Technologies

CONVENTIONAL AND MINIMALLY INVASIVE THERAPIES





Octopus® 1 • 1997



Octopus® 3 • 2000



Octopus® 2 • 1999
Octopus® 2+
Octopus® 2+ Low-Profile



Starfish

OPCAB

MICS CABG

Over 10 Years of
Commitment
to Beating Heart
Surgery



Urchin® • 2003



Starfish® Evo • 2010



Octopus® 2 • 2002



Octopus® 4.3 • 2004



Urchin® Evo • 2010



Octopus® 4 • 2002



Octopus® Evolution • 2006



Octopus® Evolution AS • 2010



Starfish® NS • 2003



Octopus® NS • 2004



Octopus® Nuvo • 2010



Octopus® TE • 2004



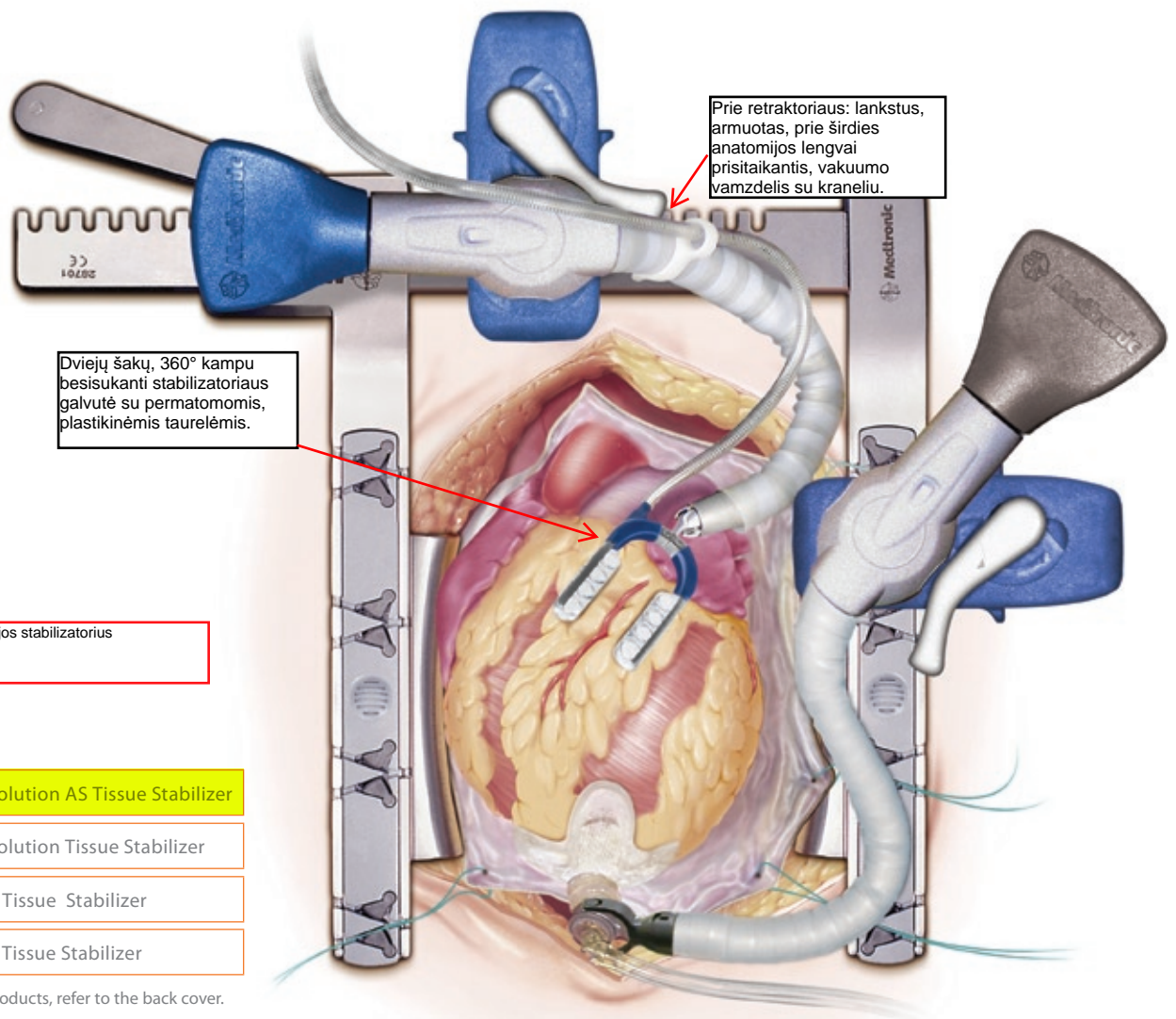
ThoraTrak® • 2008

OPCAB Technology

Excellent Stability for Completing a Beating Heart Anastomosis

Conventional Beating Heart Surgery (OPCAB)

OPCAB has been clinically shown to be less invasive than conventional arrested heart surgery. This off-pump technique, which reduces many of the deleterious effects associated with going on pump, is accomplished with the use of Medtronic's innovative product offerings.



After more than 10 years of commitment to OPCAB surgery, Medtronic offers the most complete line of stabilizers, which combines stabilization, flexibility, low profile, and ease of use to provide the ideal site for completing a beating heart anastomosis. A variety of stabilizers are offered to meet the needs of each surgeon's individual technique.

Octopus® Evolution AS Tissue Stabilizer

The newest generation tissue stabilizer from Medtronic demonstrates an enduring commitment to the cardiac surgeon. With all the same features of the Octopus Evolution—enhanced stability, flexibility, and a lower profile for unlimited positioning options—the Octopus Evolution AS offers an automatic pod spread feature that optimizes visibility at the anastomosis.

Enhanced Stability and Flexibility with both Octopus Evolution and Octopus Evolution AS

- » Effective visualization with lower profile headlink
- » Multiple device positions including pods up, pods down, and pods to the side
- » Increased flexibility and range of motion
- » Longer, effective reach of articulating arm provides easier access to all vessels
- » Simple, secure, one-handed attachment of clamp and turret assembly

Octopus®4 | Octopus®4.3 Tissue Stabilizers

The Octopus®4 and Octopus®4.3 stabilizers provide excellent stability and flexibility to meet the surgeon's needs. Each device offers a unique headlink option—both with malleable pods and Medtronic's unique automatic pod spread.

5.1 pirkimo dalis. Vainikinės arterijos stabilizatorius (vakuminis), dviejų šakų, 360° kampu besisukanti stabilizatoriaus galvutė su permatomomis, plastikinėmis taurelėmis. Lanksti, dengta silikonu, nukreipiama bet kuria kryptimi stabilizatoriaus alkūnė, stipriai fiksuojama prisukama rankenėle. Žemo profilio pagrindas, stabiliai tvirtinamas prie bet kurio ligoninėje naudojamo retraktoriaus. Stabilizatoriaus tvirtinimo jėgos indikatorius. Prie retraktoriaus: lankstus, armuotas, prie širdies anatomijos lengvai prisitaikantis, vakuumo vamzdelis su kraneliu. Maksimalus naudojamas vakuumas 400 mmHg

360° kampu besisukanti stabilizatoriaus galvutė

Octopus® Evolution AS Tissue Stabilizer

Prie retraktoriaus: lankstus, armuotas, prie širdies anatomijos lengvai prisitaikantis, vakuumo vamzdelis su kraneliu.

Octopus® Evolution

Octopus®4.3

Octopus®4

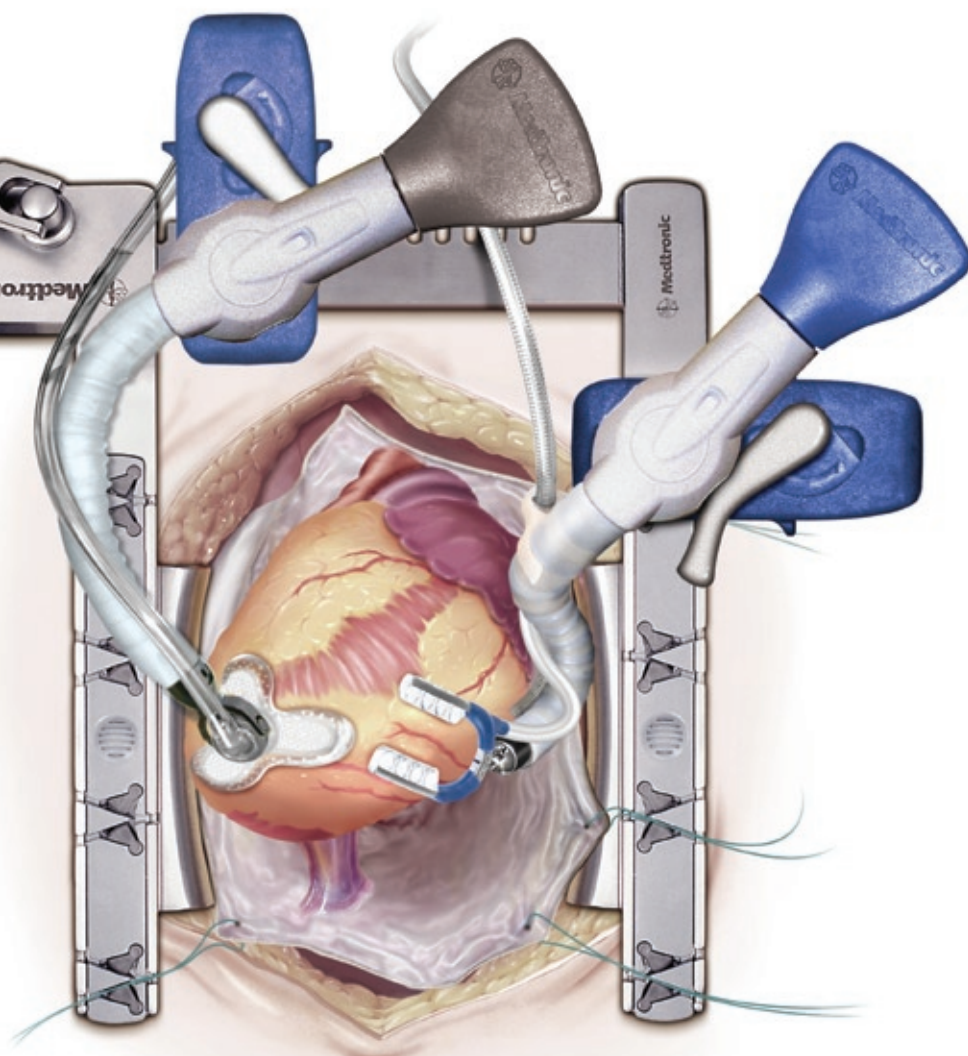
Stable | Flexible | Technique Focused

OPCAB Technology

Medtronic offers the most complete line of positioners, combining: Flexibility. Low Profile. Ease of Use.

Facilitating Solutions

Medtronic's unique heart positioners work in concert with the Octopus tissue stabilizers to facilitate clinical solutions for OPCAB procedures. Surgeons can choose from four positioner options, all of which provide enhanced visualization of the anastomotic sites.



5.2 pirkimo dalis. Vakuminis širdies viršūnės stabilizatorius universalu, žemo profilio pagrindu, stabiliai tvirtinamu prie retraktoriaus.

HP3500	Urchin® Evo Heart Positioner
HP3000	Starfish® Evo Heart Positioner
29700	Urchin® Heart Positioner
29800	Starfish®2 Heart Positioner

For a complete list of all products, refer to the back cover.

Urchin® Evo Heart Positioner

The Urchin® Evo heart positioner provides immediate tissue capture to the apex of the heart for effective positioning.

5.2 pirkimo dalis. Vakuuminis širdies viršūnės stabilizatorius universalu, žemo profilio pagrindu, stabiliai tvirtinamu prie retraktoriaus. Silikoninė kelių atšakų stabilizatoriaus galvutė

Starfish® Evo Heart Positioner

As with our previous generation Starfish® 2 heart positioner, the unique, multi-appendage silicone suction cup provides a low profile that allows for effective positioning of the heart.

Urchin® Heart Positioner

The simple design of the positioner cup provides immediate tissue capture to the apex of the heart.

Starfish®2 Heart Positioner

The unique, multi-appendage silicone suction cup provides a low profile.

Lankstus vakumo vamzdelis su kraneliu

Effective Positioning | Low Profile

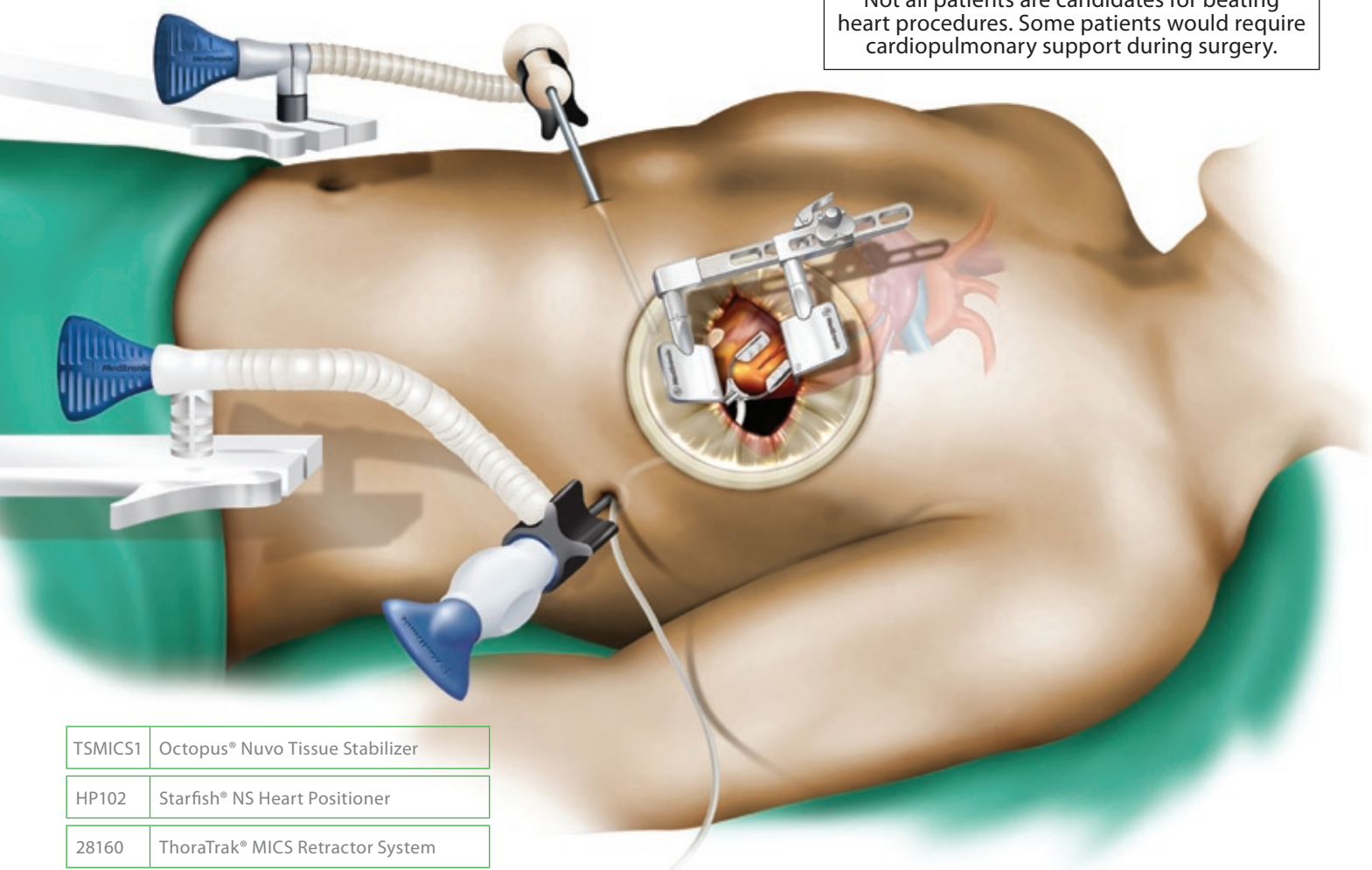
MICS CABG Technology

The stability and familiarity of OPCAB—
now available for minimally invasive procedures.

Medtronic's Commitment

Medtronic is committed to helping cardiac surgeons perform beating heart procedures through less invasive techniques using innovative MICS technology. Patients undergoing MICS CABG have similar outcomes to the conventional beating heart procedure with the added benefits of eliminating the median sternotomy and associated morbidities,^{1,2} and possible decreased recovery time.⁶

Not all patients are candidates for beating heart procedures. Some patients would require cardiopulmonary support during surgery.



TSMICS1	Octopus® Nuvo Tissue Stabilizer
HP102	Starfish® NS Heart Positioner
28160	ThoraTrak® MICS Retractor System

For a complete list of all products, refer to the back cover.

Remote insertion of the Starfish® NS and Octopus® Nuvo shafts

Octopus® Nuvo Tissue Stabilizer

Take the next step in MICS CABG technology with the Octopus Nuvo Tissue Stabilizer. Inspired by the Octopus Evolution, this new minimally invasive stabilizer offers the flexibility, stability, and ease of use of your OPCAB stabilizer.

- » Familiar stabilization technology from your OPCAB procedures
- » Smaller headlink for MICS CABG procedures
- » Malleable pods
- » Increased headlink flexibility and range of motion
- » Quick connect system

Starfish® NS Heart Positioner

- » Enables multi-vessel therapy through a small thoracotomy
- » Helps present coronary artery for direct vision anastomosis
- » In-line suction

ThoraTrak® MICS Retractor System

Your access to minimally invasive cardiac surgery

- » Interchangeable blades to accommodate various cardiovascular procedures and anatomies
- » Low-profile design



Low Profile | Quick Connect System

Enabling Technologies

Enabling technologies will contribute to the ease and success of your procedures.

OctoBase® Sternal Retractor

The OctoBase® Retractor provides the platform for countless mounting positions for Medtronic's stabilizers and positioners. The unique rail slot design allows for multiple blade configurations. Several choices for blades are available including regular/deep; fixed/swivel and wide skirted.

Disposable Suture Inserts

The suture inserts are designed for easy insertion into the OctoBase® Retractor. They provide suture retention slots for pericardial suspension.



22120	Clearview® Blower/Mister (hand piece only)	31200	2.00 mm shunt, 14 mm between bulbs	28702	Stainless steel insert blanks - standard
22150	Clearview® Blower/Mister (with tubing set)	31225	2.25 mm shunt, 14 mm between bulbs	28703	Swivel blades - standard depth
29150	AccuMist® Blower/Mister	31250	2.50 mm shunt, 14 mm between bulbs	28704	Swivel blades - deep
31100	1.00 mm shunt, 14 mm between bulbs	31175	1.75 mm shunt, 14 mm between bulbs	28705	Fixed blades - standard depth
31125	1.25 mm shunt, 14 mm between bulbs	31300	3.00 mm shunt, 14 mm between bulbs	28706	Fixed blades - deep
31150	1.50 mm shunt, 14 mm between bulbs	33100	Quickflow DPS Distal Perfusion System	28707	Suture holder inserts - disposables
31175	1.75 mm shunt, 14 mm between bulbs	28701	Retractor with stainless steel insert blanks	28709	Retractor handle - replacement component
				28710	Fixed skirted blades - deep

For a complete list of all products, refer to the back cover.

AccuMist® Blower/Mister

The AccuMist® device offers advanced fluid/gas mixing technology to create a consistent, predictable blood-clearing mist. The malleable shaft and on/off control on the handpiece make it an excellent choice for facilitating a bloodless field.

ClearView® Blower/Mister

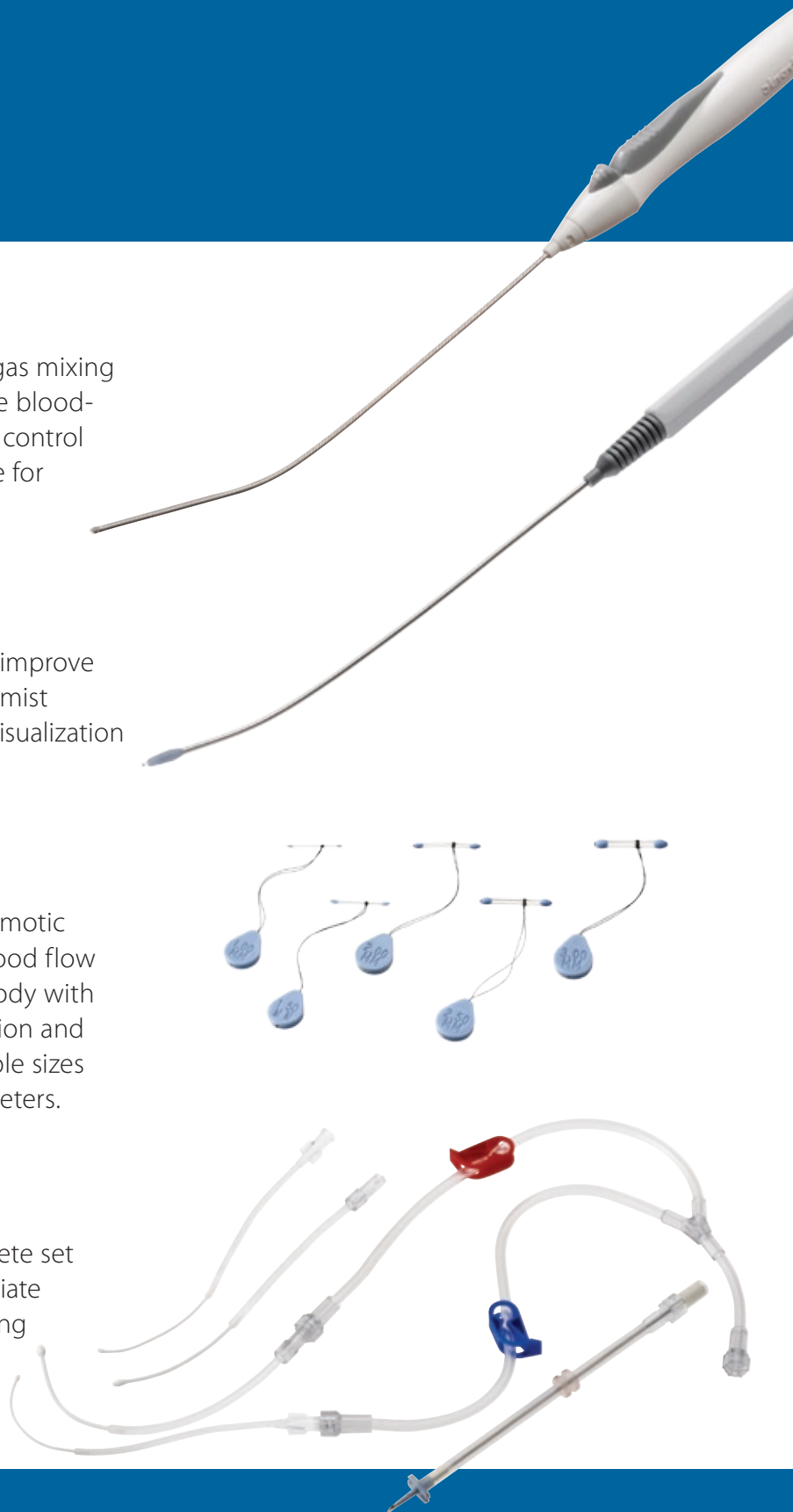
The ClearView® blower/mister is designed to improve visualization of the surgical site. An irrigation mist gently clears blood from the site, improving visualization without drying or desiccating delicate tissue.

ClearView® Intracoronary Shunt

The ClearView® shunt provides a clear anastomotic site during the procedure while providing blood flow to the distal myocardium. The soft silicone body with tapered tips is designed for atraumatic insertion and removal. Tags and tips are radiopaque. Multiple sizes are available to accommodate all vessel diameters.

QuickFlow DPS

The QuickFlow DPS system contains a complete set of components designed to establish immediate aorta-to-coronary perfusion during the beating heart procedure.



A Competitive Edge

Wherever your practice is along the continuum of beating heart surgery, Medtronic provides a competitive edge.

- » Innovative portfolio of stabilizers, positioners, and accessory products to ensure effective, efficient procedures
- » Peer-to-peer training in the latest technologies and techniques
- » Strong, knowledgeable field presence

Backed by Clinical Evidence

Compelling study results support the benefits of beating heart surgery.

- » Safe alternative to on-pump CABG¹
- » Effective option for high-risk patients and women^{2,3}
- » Can lessen need for inotropes and blood products^{1,4}
- » Reduces incidence of atrial fibrillation⁵
- » MICS CABG can reduce length of hospital stays and recovery times even further than traditional on-pump or off-pump CABG⁶

Not all patients are candidates for beating heart procedures. Some patients would require cardiopulmonary support during surgery.



moving forward

ORDER #	DESCRIPTION
BEATING HEART PRODUCTS	
TS2500	Octopus® Evolution AS Tissue Stabilizer
TS2000	Octopus® Evolution Tissue Stabilizer
29403	Octopus®4.3 Tissue Stabilizer
29400	Octopus®4 Tissue Stabilizer
HP3500	Urchin® Evo Heart Positioner
29700	Urchin® Heart Positioner
HP3000	Starfish® Evo Heart Positioner
29800	Starfish®2 Heart Positioner
EU1	Octopus® Evolution Tissue Stabilizer and Urchin® Heart Positioner (1 ea. packed & shipped separately)
ES2	Octopus® Evolution Tissue Stabilizer and Starfish®2 Heart Positioner (1 ea. packed & shipped separately)
EAUE	Octopus® Evolution AS Tissue Stabilizer and Urchin® Evo Heart Positioner (1 ea. packed & shipped separately)
EASE	Octopus® Evolution AS Tissue Stabilizer and Starfish® Evo Heart Positioner (1 ea. packed & shipped separately)
28030	Vacuum Regulator (reusable)

CLEARVIEW® INTRACORONARY SHUNTS	
31100	1.00 mm shunt, 14 mm between bulbs
31125	1.25 mm shunt, 14 mm between bulbs
31150	1.50 mm shunt, 14 mm between bulbs
31175	1.75 mm shunt, 14 mm between bulbs
31200	2.00 mm shunt, 14 mm between bulbs
31225	2.25 mm shunt, 14 mm between bulbs
31250	2.50 mm shunt, 14 mm between bulbs
31275	2.75 mm shunt, 14 mm between bulbs
31300	3.00 mm shunt, 14 mm between bulbs

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USA
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ORDER #	DESCRIPTION
OCTOBASE® RETRACTOR SYSTEM	
28701	Retractor with stainless steel insert blanks (reusable) (1 set) blades not included with this product code
28702	Stainless steel insert blanks - standard (reusable) 1 set - replacement
28703	Swivel blades - standard depth (reusable) 1 set
28704	Swivel blades - deep (reusable) 1 set
28705	Fixed blades - standard depth (reusable) 1 set
28706	Fixed blades - deep (reusable) 1 set
28707	Suture holder inserts (disposable) 10 count
28709	Retractor handle - replacement component
28710	Fixed skirted blades - deep (reusable) 1 set

QUICKFLOW DPS DISTAL PERFUSION SYSTEM	
33100	Quickflow DPS Distal Perfusion System, 5 kits
Each kit contains: 1-tubing set; 2-2.0 mm elongated arteriotomy cannulae; 1-3.0 mm elongated arteriotomy cannula; 1-4.0 mm elongated arteriotomy cannula; 1-14 gauge aortic root cannula	

BLOWER/MISTERS	
22120	ClearView® Blower/Mister (handpiece only) 10 count
22150	ClearView® Blower/Mister (with attached tubing set) 5 count
29150	AccuMist® Blower/Mister 10 count

OCTOPUS® TE TISSUE STABILIZER	
TS502	Octopus® TE Tissue Stabilizer (reusable)
DS503	Octopus® TE Articulating Arm (disposable) (5 units)
DS502	Suction/Vacuum Lines (disposable) (5 units)
DS501	Irrigator (disposable) (5 units)
MR103	Universal Stabilizer Mounting Rail (reusable)

ORDER #	DESCRIPTION
MICS CABG	
MICS1	MICS CABG Starter Pak with 5 Octopus® Nuvo, 5 Starfish® NS, MR102, MR103, and ThoraTrak®
MICS2	MICS CABG Starter Pak with 7 Octopus® Nuvo, 3 Starfish® NS, MR102, MR103, and ThoraTrak®
MICS3	MICS CABG Starter Pak with 5 Octopus® Nuvo, 5 Starfish® NS, and ThoraTrak®
TSMICS1	Octopus® Nuvo Tissue Stabilizer
HP102	Starfish® NS Heart Positioner
28610	ThoraTrak® MICS Retractor System
MR102	Mounting Rail
MR103	Universal Stabilizer Mounting Rail
28042	Table Clamp
28045	Octopus® Retractor Adapter
NUB1	Starfish® NS Heart Positioner with Rail (5 Starfish® NS Heart Positioner, 1 Mounting Rail)
NUB2	Octopus® Nuvo Tissue Stabilizer with Rail (5 Octopus® Nuvo Tissue Stabilizer, 1 Universal Mounting Rail)
NUB3	Starfish® NS Heart Positioner and Octopus® Nuvo Tissue Stabilizer (1 Starfish® NS Heart Positioner, 1 Octopus® Nuvo Tissue Stabilizer)
NUB4	MICS CABG Pak with Rails (5 Starfish® NS Heart Positioners, 5 Octopus® Nuvo Tissue Stabilizers, 1 Mounting Rail, 1 Universal Mounting Rail)

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- Mack MJ, Brown P, Houser F, Katz M, Kugelmass A, Simon A, Battaglia S, Tarkington L, Culler S, Becker E. On-pump versus off-pump coronary artery bypass surgery in a matched sample outcome of women. A comparison of outcomes. *Circulation*. 2004; 110, (suppl II):II-1-II-6.
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