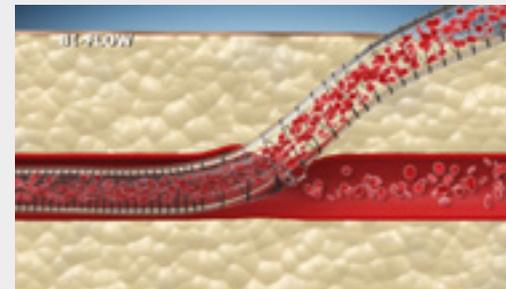
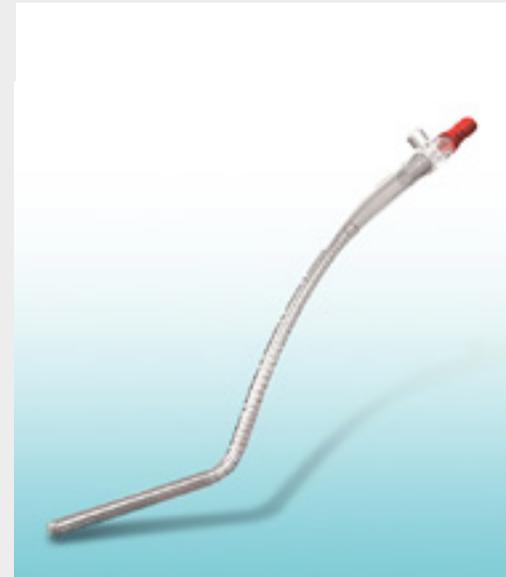




Bi-Flow - The only femoral arterial bidirectional cannula designed to easily and safely prevent limb ischemia.



Bi-Flow - Bidirectional perfusion in one unique cannula



Bi-Flow - Video Animations



Bi-Flow™ Arterial Cannula
Bidirectional perfusion, in one unique cannula

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Bi-Flow - Brochure and clinical leaflets





Bi-Flow – The only femoral arterial bidirectional cannula designed to easily and safely prevent limb ischemia.

LivaNova leads the fight against leg ischemia with breakthrough bidirectional cannula

Our Bi-Flow femoral arterial cannula has been specifically designed to prevent leg ischemia in an easy, safe and reproducible way.

The innovative, patented and award-winning design of the bidirectional cannula incorporates a unique shoulder and downstream perfusion channel that enables continuous and reliable blood flow down the femoral artery. At the same time, an open tip design ensures adequate systemic perfusion for the whole body.

This makes Bi-Flow the only cannula able to provide continuous, reliable blood flow down the femoral artery to adequately perfuse the limb, improving the safety of femoral artery cannulation during minimally invasive, redo and other complex cardiac surgery procedures.

For more information about the LivaNova Bi-Flow bidirectional cannula, please visit our [product highlights section](#), where you will also find:

- Complete product information and product brochure
- Clinical summaries of our first in human trials and in-animal model
- Educational and instructional videos, both animated and in-OR

Not approved in all geographies. For further information on product availability, please contact your local representative.
For indications, contraindications, precautions and warnings for each device, please refer to the Instructions For Use

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PRODUCT HIGHLIGHTS

Bi-Flow – Bidirectional perfusion in one unique cannula

Bi-Flow is the only bidirectional arterial cannula on the market designed to reduce the risk of limb ischemia in an easy, safe and reproducible way.



Unlike traditional cannulae, Bi-Flow's patented design incorporates a unique elbow and downstream perfusion channel.

The cannula is easy to insert and remove and provides simultaneous systemic and distal perfusion to the lower limb.

Limb ischemia is an often-underestimated potential complication of femoral artery cannulation. It can affect up to 11% of patients* undergoing complex cardiac surgery procedures and may have devastating consequences such as higher mortality, higher morbidity and longer hospital stay.

The LivaNova Bi-Flow cannula is designed to reduce this risk in all procedures requiring femoral cannulation, including:

- Minimally invasive cardiac surgery
- Re-do cardiac surgery
- Other complex cardiac surgery procedures.

In addition to its unique bidirectional perfusion design, Bi-Flow also offers:

- Simple and straightforward insertion and removal process, both percutaneously using a standard needle and guide wire technique or after a surgical cut-down
- DOP-free tubing for enhanced biocompatibility
- Optimal pressure drop level for adequate systemic perfusion

In addition to Bi-Flow, LivaNova offers a complete cannulae portfolio for direct and femoral cannulation, as well as a comprehensive range of aortic and mitral valve replacement solutions to accommodate all MICS clinical needs.

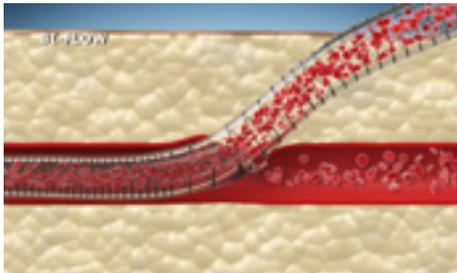
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VIDEO

Bi-Flow Arterial Cannulae Animation



Leg ischemia is a devastating and often underestimated side effect of femoral artery cannulation. The outcomes can be devastating, including higher morbidity and mortality.

This video animation focuses on the clinical challenge of leg ischemia that results from the insertion of a standard femoral arterial cannula. It demonstrates how Bi-Flow unique features are designed to reduce this risk by providing stable distal perfusion to the lower limb without compromising systemic flow to the patient.

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VIDEO

Bi-Flow Arterial Cannulae Direct Insertion in MICS



This video shows the Bi-Flow bidirectional cannula insertion and removal using a surgical cut-down technique.

Note how the cannula is easy to insert and remove, even when compared to standard femoral arterial cannulae. The video was shot at the Alfred Hospital of Melbourne, Australia.

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VIDEO

Bi-Flow Arterial Cannulae – Percutaneous insertion – Animation



This video animation focuses on how Bi-Flow is inserted and removed when applying a percutaneous insertion technique. It demonstrates Bi-Flow's bidirectional cannula ease of use and the main steps to follow to ensure correct positioning of the cannula and of the downstream perfusion channel.

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WATCH VIDEO



WATCH VIDEO



WATCH VIDEO

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PRODUCT BROCHURES

Bi-Flow™ Arterial Cannulae

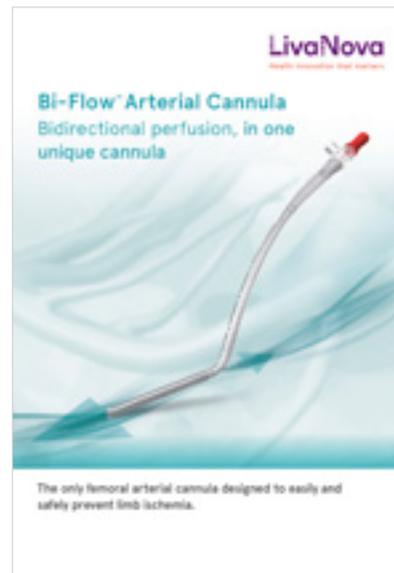
An overview of LivaNova's breakthrough device designed to prevent leg ischemia

Bi-Flow™ Arterial Cannula is an all new solution for cardiac surgery procedures requiring femoral artery cannulation

Download the product brochure to discover its innovative design and performance characteristics of this unique bidirectional cannula designed to prevent leg ischemia in an easy, safe and reproducible way.

Bi-Flow™ Arterial Cannula is an exciting addition to our already robust collection of cannulae, designed to provide a practical solution to an unmet clinical need.

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CLINICAL LEAFLETS

Bi-Flow Arterial Cannulae demonstrate significantly higher blood flow in the lower extremity compared to conventional cannulae at all CPB flow rates.

Dr. Chen's paper¹ demonstrates the superior femoral artery flow and pressure characteristics of Bi-Flow through a comparison with a standard femoral arterial cannula. It shows how Bi-Flow was simple to insert and position, and how the bidirectional cannula can supply adequate blood flow to the lower limb at full CPB support.

This is a well-designed and well-performed experimental study that clearly demonstrates the benefits of this bidirectional femoral cannula. This study suggests that Bi-Flow may have significant benefits in both minimally invasive valve replacement and other cardiac surgical patients undergoing peripheral cannulation.

¹ Yi Chen, Elli Tutungi, James McMillan, Sara M. Tayeh, Jess K. Underwood, Adam C. Wells, Julian A. Smith, and Randall A. Moshinsky, (2017). Pressure and Flow Characteristics of a Novel Bidirectional Cannula for Cardiopulmonary Bypass. Innovations, Volume 12, Number 6, November/December 2017

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CLINICAL LEAFLETS

Bi-Flow Arterial Cannula is safe and easy to insert and provides stable distal perfusion of the cannulated limb.

Dr. Marasco's paper¹ demonstrates that the novel bidirectional cannula is safe and easy to insert and provides stable distal perfusion of the cannulated limb in patients undergoing femoral arterial cannulation for CPB during cardiac surgery. It shows how Bi-Flow should largely obviate the need to insert a separate downstream perfusion cannula or use other techniques to protect against lower limb ischemia.

In this phase-1 clinical trial Bi-Flow was inserted and removed without any procedural complications. Continuous stable distal perfusion was demonstrated using NIRS in 14 of 15 patients and in 100% of the cases mean arterial pressure was deemed sufficient to ensure adequate organ perfusion.

¹ Silvana F. Marasco, Elli Tutungi, Shirley A. Vallance, Andrew A. Udy, Justin C. Negri, Adam D. Zimmet, David C. McGiffin, Vincent A. Pellegrino, and Randall A. Moshinsky, (2018). Phase 1 Study of a Novel Bidirectional Perfusion Cannula in Patients Undergoing Femoral Cannulation for Cardiac Surgery. Innovations, Volume 13, Number 2, March/April 2018

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