Microsurgical Flowprobes

Flaps • Reattachments

Transonic® Microsurgical Flowprobes measure volume flow in blood vessels or grafts from 0.5 to 4.0 mm diameter. Flow measurement in these vessels during microvascular procedures quantify flows in the smallest vessels in order to objectively assess the quality of the reconstruction or reattachment, guide better surgical decisions and give the surgeon the opportunity to correct otherwise undetectable flow restrictions before closing the patient. Due to extreme accuracy requirements, this Microsurgical Flowprobe Series is only available with the Optima Flowmeter.

Microvascular Flowprobe (2 mm) showing handle and flexible probe neck for easy positioning of the Flowprobe around a vessel.

Ultrasonic sensing windows of Microvascular Flowprobe (MU) Series.

Side-by-side comparison of a 0.7 mm Flowprobe with a 25g. needle.

Microvascular Flowprobe (-MU) Series including 0.7 mm, 1 mm, 1.5 mm, 2 mm, and 3 mm Flowprobes.
Surgery

Clamp-on Tubing Flowsensors

HQD_XL-Series Clamp-on Tubing Flowsensor

Tygon Stock Tubing: If using tubing of different diameter or type, please discuss tubing with a customer service representative.

CAROTID SHUNTS

HQD 2XL
HQD 3XL
HQD 4XL
HQD 5XL
HQD 6XL
HQD 7XL
HQD 8XL
HQD 9XL
HQD10XL
HQD11XL
HQD12XL

PED CPB, ECMO

HQD 6XL
HQD 7XL
HQD 8XL

ADULT CPB

HQD 9XL
HQD 10XL
HQD 11XL

Important: A sample of the tubing to be used with the Tubing Flowsensor must accompany a purchase order in order to calibrate the Flowsensor precisely.

Clinical Tubing Flowsensors will be calibrated for clinical use only: blood at 37 degrees Celsius.

Stock Tubing

<table>
<thead>
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<th>Procedure</th>
<th>Cat #</th>
<th>TUBING (inches)</th>
<th>Tygon Stock Tubing: If using tubing of different diameter or type, please discuss tubing with a customer service representative.</th>
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<td>CAROTID SHUNTS</td>
<td>HQD 2XL</td>
<td>3/32 x 1/32</td>
<td>Tygon ND 100-65; Tygon E-3603</td>
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<td>HQD 3XL</td>
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<td>HQD 4XL</td>
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</table>
Transonic’s application-customized Flowprobes measure volume flow in blood vessels and grafts from 0.5 mm to 36 mm to:

- Quantify blood flow
- Identify technical problems early
- Improve patient outcomes
Cardiac Flowprobes

Coronary Artery Grafts • Ascending Aorta

Transonic® Cardiac Flowprobes include FMC-Series Flowprobes for coronary artery bypass grafting surgery and COnfidence Flowprobes® for continuous measurement on great vessels with turbulent flows.

Coronary Flowprobes

FMC-Series Coronary Handle Flowprobes are available in sizes 1.5 mm to 4 mm. They feature a J-style reflector, designed for spot flow checks of coronary artery bypass grafts and an extended neck with a flexible end to reach coronary grafts even behind the heart.

Non-handle COnfidence Flowprobes®

AU-Series COnfidence Flowprobes® consist of a Flowprobe shell and a single-use soft, flexible Ultrafit liner. This novel concept for ultrasonic signal coupling enables immediate, beat-to-beat flow measurements with a minimum of ultrasonic coupling gel. The form-fitting Ultrafit Liner slips into the transducer shell to encircle the vessel and keep the vessel in place. The liner cushions and protects the vessel. Liners are incrementally sized for an optimal fit on the target vessel.

COnfidence Flowprobes® (-AU-Series), designed with four transducers, provide highly accurate measurements in vessels with highly turbulent flows such as the ascending aorta. The Flowprobe’s slim, ergonomic profile creates a minimal footprint that fits in tight anatomical sites. The soft, pliable liner cushions and protects the vessel. Available in 17 sizes from 4 mm to 36 mm.
Transonic’s spectrum of Vascular Flowprobes measure volume flows intraoperatively in vessels and grafts from 1.5 mm to 14 mm to detect blood flow obstructions before leaving the operating room. In critical transplant surgeries, intraoperative flow measurements can guide surgical decisions to ensure vessel patency prior to closing. The ability to correct otherwise undetectable flow restrictions provides the surgeon with a unique opportunity to improve the outcome for his or her patient.

**Vascular Handle Flowprobes**

FMV-Series 4 and 6 mm Vascular Flowprobes recommended for measuring hepatic arterial flow. Picture shows Flowprobe handle with size of Probe in mm, the Probe’s flexible neck for optimal positioning of the Probe around the vessel, the Probe body that houses the ultrasonic transducers, and the Probe reflector. Vessel is positioned within the Probe sensing window that is defined by the Probe body and its stationary reflector.

**Carotid Flowprobes**

FME-Series Flowprobes in sizes 1.5 to 10 mm sizes feature an L-shaped reflector that allows the probe to be slipped on and off a carotid artery easily, facilitating quick pre- and post-procedure measurements while protecting against dislodging of plaque during application of the Flowprobe.

**Port-Access Flowprobes**

FD-Series Port-Access Flowprobes allow for confirmation of flow during robotic surgery when no other way to assess flow is available. They feature a J-style reflector and a long endoscopic handle with a groove to hold tubing through which acoustic couplant is injected by a syringe into the measurement site. They are available in four sizes: 1.5 mm, 2 mm, 3 mm, and 4 mm. (Currently CE marked, FDA clearance pending).

P-Series Port Access Flowprobes (long handle, J-reflector) in 2 mm, 3 mm, 4 mm sizes are available in the US.

**AU-Flowprobes for TX**

AU-Series Flowprobes in sizes from 4-16 mm sizes are ideal for measuring continuous flow in the portal vein during liver transplantation.

(FD-Series Port Access Flowprobes are available in Europe)

(P-Series Port Access Flowprobes are available in the USA)
Cerebrovascular Flowprobes

Aneurysm Clipping • EC-IC Bypass • AVMs • Fistulas

Transonic® Cerebrovascular (Charbel) Flowprobes® measure volume flow in intracranial and extracranial vessels during cerebrovascular flow preservation or flow augmentation surgeries. Intraoperative measurements of volume flow assure the integrity of cerebral flow or they alert the surgeon to dangerous flow deficits at a time when every minute counts. Available as single use (pre-sterilized MB, MB-S) or 16-use (MR, MR-S) flowprobes.

Intracranial Flowprobes

Long bayonet neck intracranial Charbel Micro-Flowprobes® are available in three sizes, 1.5 mm, 2 mm and 3 mm for aneurysm clipping, AVM and dural fistula obliteration surgeries. -MB & -MR-Series Charbel Micro-Flowprobes® are designed to measure flow in major intracranial vessels of the Circle of Willis. Their long bayonet neck permits use under a surgical microscope and a flexible neck segment permits bending the Flowprobe as needed to most easily position the probe around the vessel.

Extracranial Flowprobes

Short bayonet neck extracranial Charbel Flowprobes® are available in three sizes, 3 mm, 4 mm and 6 mm for extracranial vessels such as the superior temporal artery during extracranial-intracranial (EC-IC) bypass surgeries. Their short bayonet neck permits use under a surgical microscope and a flexible neck segment permits bending the Flowprobe as needed to precisely position the probe around the vessel.

Intracranial/Extracranial Probe Comparison

Side-by-side comparison between intracranial Charbel Micro-Flowprobes® and shorter neck extracranial Charbel Flowprobes® used during EC-IC bypass surgery.