

Perivascular Flowprobes from A - Z

Acute or Chronic Studies: vessel outer diameters 250µm - 36 mm

Transonic Systems' non-constrictive flowprobes measure volume flow in arteries, veins and ducts independent of vessel diameter. Transit time ultrasound measurements are inherently accurate because flow is measured directly rather than being derived from velocity measures and estimates of vessel diameter.

Flowprobes tailored to your application

Myocardial Function

Pulmonary Function

Coronary Function

Renal Hypertension

Nutrient Uptakes

MRI Studies

Lymph Flow Dynamics

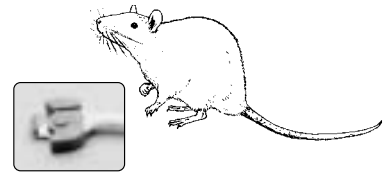
Fetal/Pregnancy
Hemodynamics

Peripheral Flow Studies

Flowprobes are sterilized by ethylene oxide gas or STERRAD.

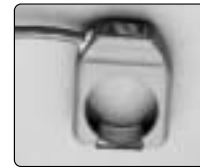
Microcirculation (V-Series)

The V-shaped reflectors of these probes magnify ultrasonic illumination for definitive resolution and accuracy in undersized vessels (0.5 - 1.0 mm, *see page 9*).



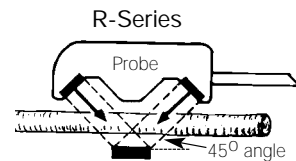
Cardiac Output (A-Series)

Our full line of A-Series probes have 4-crystal illumination and trim bodies for accurate measurement of highly turbulent flow profiles such as the ascending aorta and pulmonary artery (8 - 36 mm, *pages 10-12*).



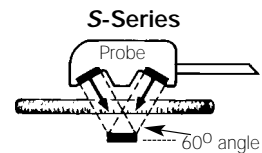
R-Series

Probes have the transducers positioned at a 45° angle to the vessel under study for optimum resolution (1 - 8 mm, *pages 13-14*).



S-Series

Probes have the transducers positioned at a 60° angle to the vessel. This reduces the flowprobe body size and reflector width for placement of the probe in applications where space is limited (2 - 24 mm, *pages 13-15*).



A Word about Our Calibration . . .

Transonic flowprobes are precalibrated at the factory for your convenience using a gravity fed constant flow bench set-up with water at room temperature (*see page 44*). This compensates for different acoustic conditions with the use of an acoustic gel for acute applications versus fibrotic tissue ingrowth in chronic implants.

We calibrate our probes differently depending on their intended use. Probes for acute application are calibrated to read 10% higher than probes for chronic implant. Sub-acute applications of only 1 -2 days more closely mimic an acute preparation and should be calibrated as such. For probes that are used for both acute and chronic applications, we recommend the acute calibration since acute measurements are more often interpreted in absolute terms. In contrast, chronic protocols are generally evaluated in relative terms as changes in flow over time.

To Order: Call 607-257-5300 or 800-353-3569; Fax 607-257-7256



Flowprobes for the Rodent Model

For studies in rats, mice, guinea pigs & hamsters

Trends in animal research dictate the need for tools and techniques that can be used in the small animal model. The T106 / T206 flowmeter and miniature flowprobes provide accurate, repeatable, high resolution flow measurements for cardiovascular and peripheral vascular studies in rats, mice, guinea pigs and hamsters. Request our free support materials for small vessel applications.

250 μ - 1 mm probe



1V, 0.7V, 0.5V: Acute application only
see next page.
Handle suggested for stable positioning.

1 mm probes

Probes pictured are actual sizes.



1RB: 1 mm R-Series back cable exit, J reflector; rat peripheral vessels: chronic implant.



1RS: 1 mm S-Series side cable exit, J reflector w/ slide

1.5 mm probe



1.5RB: 1 mm R-Series back cable exit only, J reflector

2 mm probes

Most Transonic R & S-Series probes are available with a back or side cable configuration.



2SB: 2 mm S-Series probe, back cable exit, J reflector with slide; rat portal vein, abdominal aorta, acute ascending aorta, pulmonary artery



2SS: 2 mm S-Series probe, side cable exit, J reflector

2.5 mm probes



2.5SS: 2.5 mm S-Series probe, side cable exit, J reflector and slide

New!



2.5SB: 2.5 mm S-Series back exit also available (*not pictured*); sternal approach to implant to rat ascending aorta

2.5SL: New configuration for rat ascending aorta, lateral thoracotomy approach to implant

Please note: Your preferred surgical protocol will determine the appropriate cable exit orientation and connector for specific applications. See page 19 for reflectors and page 21 for mini-connectors.

CAT # Probe	VESSEL		BIDIRECTIONAL FLOW				ACCURACY			ULTRA SOUND Frequency MHz
	O.D. mm chronic application	O.D. mm acute application	Resolution ml/min	Scale Settings Low Flow Normal Flow ml/min ml/min		Maximum Range ml/min	Zero Offset ml/min	Absolute Accuracy %	Relative Accuracy %	
1R	0.5 - 1.0	0.7 - 1.0	0.05	5	20	100	± 0.5	± 20	± 2	7.2
1.5R	1.0 - 1.5	1.2 - 1.8	0.075	10	40	200	± 1.0	± 20	± 2	4.8
2S	1.3 - 1.8	1.5 - 2.0	0.1	25	100	500	± 3.0	± 15	± 2	3.6
2.5S	1.5 - 2.4	1.8 - 2.5	0.1	25	100	500	± 3.0	± 15	± 2	3.6

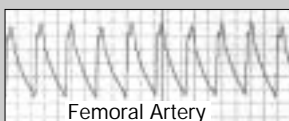
Microcirculation Probes



Animal Research Flowmeters
Acute & Chronic Studies

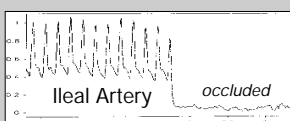
Probe series for micro-measurements in acute studies

FLOW WAVEFORMS FROM THE RAT MODEL



Femoral Artery

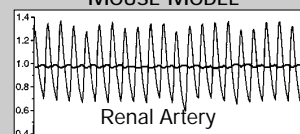
Trace, courtesy of T.L. Smith, PhD
Bowman Gray Med. School.



Ileal Artery

Trace, courtesy of D. Kanter,
Johns Hopkins Univ.

MOUSE MODEL



Renal Artery

Trace, courtesy of J. Lorenz,
Murine Physiology Cor Facility
Univ. of Cincinnati

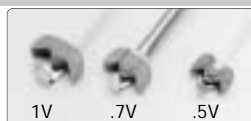
Direct volume flow measurement in vessels as small as 250µm can be measured with breakthrough technology of Transonic

Systems' V-reflector probes. The innovative V shape of the probe's reflector creates a mirrored reflective pattern resulting in heightened ultrasonic illumination, greater sensitivity and definitive, absolute accuracy of measurements.

- 0.5 mm V: for vessels 250 - 500 µm diameter
- 0.7 mm V: for vessels 350 - 700 µm diameter
- 1.0 mm V: for vessels 500 - 1000 µm diameter

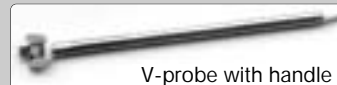
Most T106 & T206 flowmeters can be upgraded with microcirculation circuitry.

Call customer service with flowmeter serial number.



0.5V probe on long posterior ciliary artery of the cat's eye.

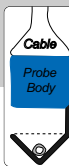
Photo courtesy of Dr. M. Koss, Univ. of Oklahoma HSC.



V-probe with handle



Handles on V-probes allow for stable position with a micromanipulator.



Probes are positioned so the vessel diameter is completely within the V defined by the reflector.

CAT # Probe	PROBE BODY (same as)	VESSEL O.D. mm acute application	BIDIRECTIONAL FLOW			ACCURACY			ULTRA SOUND Frequency MHz
			Scale Settings		Max. Range	Zero Offset	Absolute Accuracy	Relative Accuracy	
			Low Flow	Normal Flow					
0.5V	1R	0.25 - 0.50	2.5	10	50	0.2	± 15	± 3	7.2
0.7V	1.5R	0.35 - 0.70	5.0	20	100	0.5	± 15	± 3	4.8
1.0V	2S	0.5 - 1.0	10	40	200	1.0	± 15	± 3	3.6