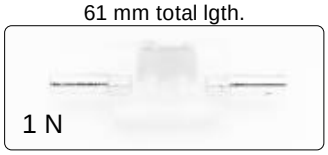
N-Series In-Line Flowprobes

In-line (N-Series) flowprobes splice into laboratory tubing & measure absolute volume flow of blood or other fluids

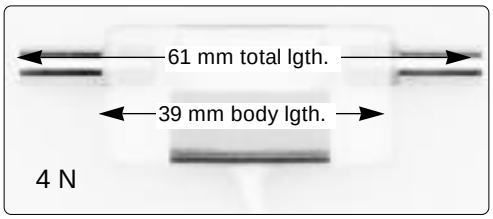
In-line flowprobes offer maximum flexibility in experimental design since the ultrasound signal need not be timed and calibrated for a specific tubing material *(as with sterile tubing flowsensors)*.

- These probes have the highest resolution for low flow conditions in perfused organ studies for venous cannulation.
- Exceptional electrical and zero baseline stability
- Measure saline solutions and other non-aerated liquids, as well as blood.
- Nonmagnetic probes available for MRI

61 mm total lgth.



Sample In-Line Probes



Ideal for Isolated Organ Preps

Information needed for flowprobe calibration includes: application, operational temperature; fluid to be used (blood, saline, other); flow ranges expected.

Please note:

In-line flowprobes have a limited maximum flow range as indicated in the table below. The non-uniform flow cavity is sensitive to highly pulsatile and turbulent flow profiles with peak flow above the maximum range. For highest accuracy over a wide dynamic flow range we recommend our sterile tubing flowsensors.

Specifications

In-Line Flowprobes	Lgth Total	Lgth Probe Body	FOR TUBING[1] I.D.		BIDIRECTIONAL FLOW Resolution	Low Flow Scale Factor	Normal Scale Factor	Maximum Range 2	ACCURACY Maximum 3 Zero Offset	Absolute 4 Accuracy	Maximum 5 average probe power dissipation
	mm	mm	inches	mm	ml/min	ml/min	ml/min	ml/min	ml/min	%	mW
1N	25	13	0.046	1.2[6]	0.05	5	20	30	± 0.5	± 15	0.2
2N	42	31	1/8	3.2	0.1	25	100	150	± 2	± 7	0.7
4N	61	39	3/16	4.8	0.4	100	400	600	± 5	± 7	1.1
6N	70	44	1/4	6.3	1	250	1 L	1.5 L	± 10	± 7	1.6
8N	96	74	3/8	9.5	2	500	2 L	3 L	± 20	± 7	1.7
12N	85	56	1/2	12.7	8	1 L	4 L	6 L	± 80	± 7	1.7
16N	88	56	0.710	18.0	20	2.5 L	10L	15L	± 200	± 7	2.5
20N	96	63	0.817	20.8	20	2.5 L	10 L	15 L	± 200	± 7	2.5
24N[7]	121	92	0.930	23.6	40	5 L	20 L	30 L	± 400	± 7	3.3

Molded cases: 2N, 8N, 12N
Machined plastic cases: 1N, 4N, 6N, 16N, 20N, 24N
Tubing fittings: stainless steel is standard; can be supplied in brass for MRI or other:

1 May be used on different tubing sizes if tubing seals well on the stainless steel fittings of the probe
2 Maximum flow capability: Flowsensors will underestimate flow at rates exceeding the maximum linear range with loss of linearity.
3 The actual maximum zero offset for a probe is often lower than this value, as specified on the probe's Data sheet.
4 Precalibrated for use on specified fluid and temperature. Indicated flow decreases by 1% for every 5ºC increase in temperature. Probe recalibration is necessary when used on liquid with acoustic velocity different than water.
5 This is the time averaged sum of both the electrical dissipation (self-heating) within the probe, and the radiated ultrasonic power.
6 The O.D. of the stainless steel fittings of the 1N in-line probe is 3/32" (2.4 mm). This wall thickness is needed to ensure integrity of the probe.
7 For use on T108 / T208 flowmeters only.