BLF22 Technical Note

Use of the Balance Arm for Laser Doppler Probes

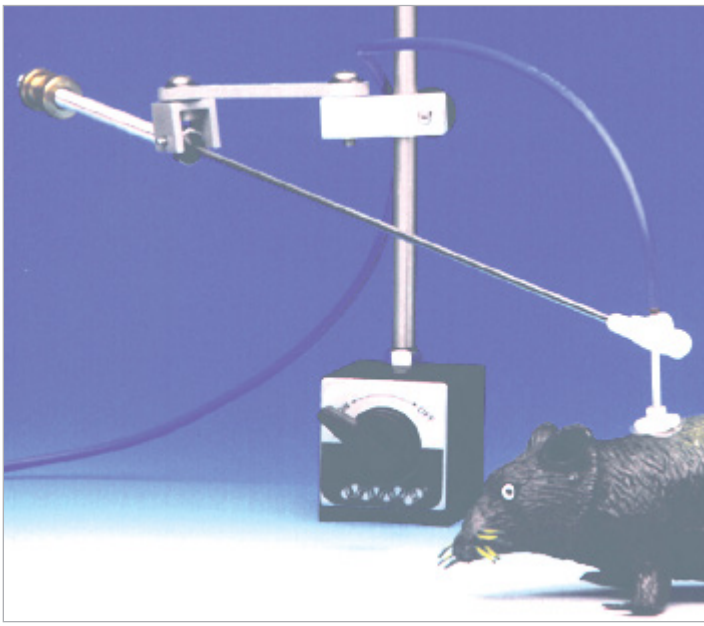
In preparing to use a BLF22 Tissue Perfusion Monitor, the method of holding the Probe is critical. In general, holding the Probe in a manner which fixes its position relative to the tissue under study, without creating motion artifacts or applying pressure (which will occlude the underlying microvasculature) is required for meaningful measurements. There are several methods of Probe placement which may be used to meet these requirements (see LD-106-tn).

BALANCE ARM PROBE HOLDER

A floating placement device or Balance Arm Probe Holder can be used to hold the Probe with a very light pressure. This is best on tissue that moves slowly but markedly, such as by peristalsis. In using the balance arm, the weight of the Probe and suspended cable is almost totally counter balanced and the Probe is fixed to the tissue. Various methods can be used including:

- Cyanoacrylate glue (Nexaband®) or equivalent. This works for a relatively large faced Probe where the glue can be far enough from the center of the Probe so as not to effect the tissue perfusion at the center.
- A silicone or rubber Probe holder sutured or glued to the tissue. This allows the attachment point to be farther from the tissue being studied.
  - 3 mm silicone Probe holder (15 mm dia) used with an 11 gauge Type N Probe
  - 6 mm rubber Probe holder (35 mm dia) used with a Type S Probe (6 mm dia)

The tissue is free to move in three dimensions and the Probe will follow, neither adding Probe-to-tissue motion nor compressing the tissue (examples: lung surface, intestinal serosa or mucosa).



Balance Arm Holder Components from left to right:

- Balance Arm
- Brass Counter Weight
- Balance Arm Pivot Point
- Upper Cable Clamp (not shown)
- Swing Arm, above Pivot, attached to Arm Clamp
- White plastic Arm Clamp
- Vertical Shaft
- Magnetic Holder
- Lower Cable Clamp (not shown)
- Cap
- Balance Arm Tip
- Balance Arm Eye (at the end of the arm) and Thumb Screw Wrist portion of the Balance Arm Tip with set screw

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Setting up the Balance Arm (ALHBL)

UNPACKING AND ASSEMBLY

- Place the Magnetic Holder on a ferrous surface and switch the lever to “ON”; holding the assembly in place.
- Slide the white Lower Cable Clamp on the Vertical Shaft and down about half way.
- Orient the arm section so that the Balance Arm is below the Swing Arm and the Swing Arm is above the attaching white Arm Clamp.
- Slide the Arm Clamp over the Vertical Shaft.
- Put the protective Cap on the top of the Vertical Shaft.

ATTACHING THE PROBE TO THE BALANCE ARM

- Put the Probe tip through the Eye at the end of the Balance Arm.
- Tighten the Thumb Screw at the end of the arm to hold the Probe.
  - on the hub of Type N Probes
  - lightly on the cable of Type S Probes
- Gently push the cable into the plastic holder (Upper Cable Clamp) on the side of the Pivot Point.
  - do not pull the cable tight forcing an acute angle between the cable and Probe tip
  - minimize the cable left between the Probe tip and the Upper Cable Clamp
- Loop the next several inches of cable from the Upper Cable Clamp to the Lower Cable Clamp.
- Arrange the brass Counter Weights so as to offset the Probe’s weight.
- Adjust the height of the Lower Clamp & Arm Clamp to bring the Probe tip to the tissue.
- Adjust the Wrist portion of the Balance Arm Tip by loosening the screw, to make the desired angle with the tissue in the fore-aft plane.
- Fix the Probe holder or the Probe top to the tissue (see previous page for suggested methods).
- Attach the Probe connector to the BLF Monitor and begin making measurements.

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Transonic Systems Inc. is a global manufacturer of innovative biomedical measurement equipment. Founded in 1983, Transonic sells “gold standard” transit-time ultrasound flowmeters and monitors for surgical, hemodialysis, pediatric critical care, perfusion, interventional radiology and research applications. In addition, Transonic provides pressure and pressure volume systems, laser Doppler flowmeters and telemetry systems.

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