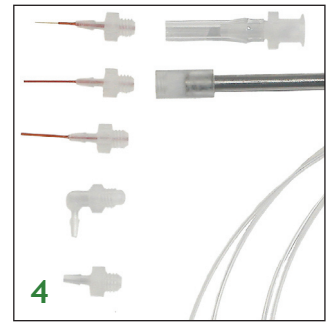
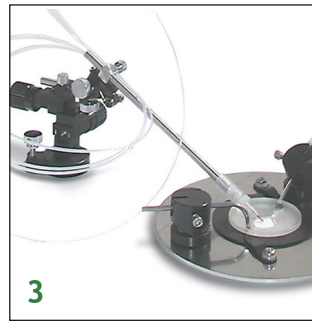


# Universal Miniature Manifolds, MM



1. The manifold comes with three replaceable tips 100, 250 and 360  $\mu\text{m}$  I.D. for single cell or tissue superfusion and nozzles to use for bath perfusion. Some vacuum grease might be used over the threaded part of the tip to provide air tight seal. Polyimide tubing that makes the replaceable 250 and 360  $\mu\text{m}$  tips of the manifold can be cut to a required length using a scalpel or a sharp blade. The 100 $\mu\text{m}$  tip has a protective 250/360  $\mu\text{m}$  tubing around the tip; take care while cutting the tip.
2. The manifold's metal body, a 4 mm O.D. stainless steel, can be mounted on miniature manipulators. The 4 mm rod can be also used to attach the manifold to magnetic holder MTH for small chamber perfusion. The included 7 mm adapter allows you to attach the manifold to regular size manipulators as well.



3. To prevent contamination of the sample chamber after test solution application, the chamber can be washed with a buffer using the perfusion system and miniature holders for suction MTH-S and inflow MTH.
4. Always wash the manifold with DISTILLED water after use. To prevent clogging, suck in some distilled water through the replacement tip using a 5-10ml syringe with luer connector attached to a soft tubing that fits over the threaded part of the tip (included). Dry the tip afterwards, by sucking in some air.

Note 1: Although the manifold provides eight separate channels, you do not have to use eight different solutions. The channels can be filled with the same solution. This will accelerate the solution exchange inside the manifold. This can be used to washout the inside of manifold with control buffer much faster, for example.

Note 2: Although adequate solution flow through the manifold will occur even when a regular gravity driven perfusion system is used (with 250/360  $\mu\text{m}$  I.D. tips), much faster flow rate (through 100  $\mu\text{m}$  I.D. tips, especially) can be achieved if solutions are pressurized (in SVDS1 system, for example). The threaded connection allows you to use the manifold with solutions under higher pressure to facilitate flow through 100  $\mu\text{m}$  I.D. tips.

Note 3: The connecting Teflon tubing can be cut shorter to minimize the dead volume between solutions and the manifold.

Note 4: To provide faster superfusion around your sample, you can prime the manifold with the test solution first. This means that one of channels should be reserved to remove/wash/prime the dead volume inside the manifold by connecting to a source of negative pressure. The priming of the manifold is achieved by brief opening of wash channel at the same time as a channel with a test solution opens. Brief opening of wash channel results in fast replacement of solution inside the dead volume with the test solution. A flow unit CFPS-1U can be used as a source of negative pressure.

Note 5: Teflon connecting tubing (2 ft. long) should be attached to a perfusion system, PS15-8 for example, using short pieces of soft silicone tubing or connectors from PS-KIT fitting kit; the other inlet of solenoid valves can be connected to syringes with solutions held in syringe holder SH-1A for gravity driven perfusion.

Note 6: If small volume delivery system SVDS1 used with a single source of pressure the manifold should be connected to PS15-8 system first, to brake the lines and to prevent back flow; the other inlet of the valves should be connected to pressurized small volume delivery system SVDS1.

