

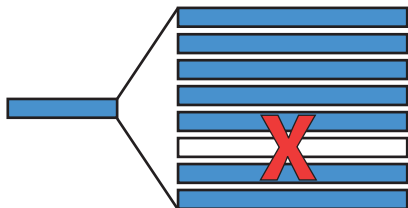
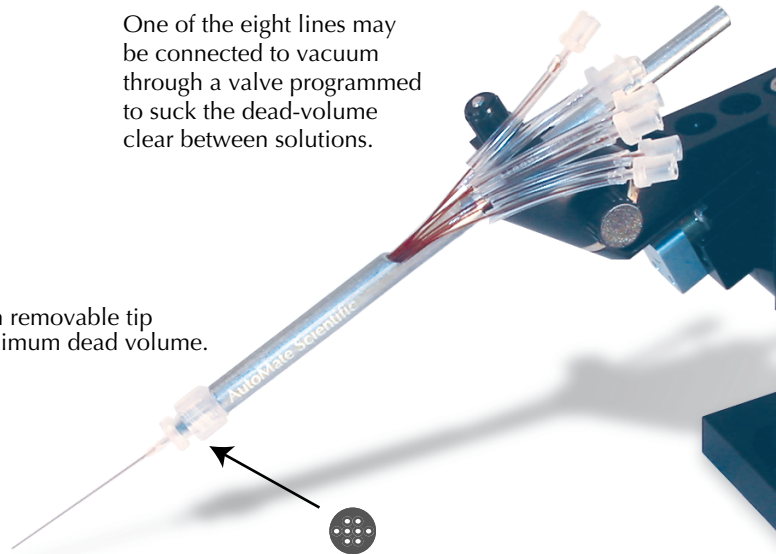
## Perfusion Pencil

#04-04-xxx	4-channel Pencil w/xxx $\mu$ m Tip
#04-08-xxx	8-channel Pencil w/xxx $\mu$ m Tip
#04-16-xxx	16-channel Pencil w/xxx $\mu$ m Tip

### Replacement Tips:

Part No.	Description
04-360	360 $\mu$ m Tip
04-250	250 $\mu$ m Tip
04-100	100 $\mu$ m Tip

Tighten removable tip for minimum dead volume.



### NO EMPTY TUBES!

ALL tubes of the Perfusion Pencil MUST be filled with solution before starting every experiment, even if they are not being used. Otherwise liquid will flow backwards into the empty tubes, then leak out and CONTAMINATE the other solutions later.

### Cutting

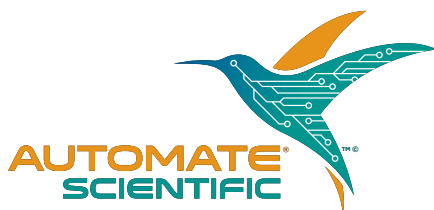
The Removable Tips are shipped with 1.5" (3.8 cm) length polyimide needles. They are intended to be cut to a desired length by rolling a razor blade on them against a hard surface. However, this may leave a small crack or barb on the tip. To get a flat cut, score the coating of the needle with a ceramic cleaving stone or a diamond cutter and pull directly apart, making sure not to pull at an angle. You may notice a larger outer tube enclosing the lower part of our smaller, 100 $\mu$ m needles. This is simply for added rigidity, and can be cut if needed.

### Chemical Information

The tubing inside the manifold body is polyimide (nylon). The largest connection tubing is vinyl. The Removable tips include a medical grade polypropylene Luer-lock fitting with a fused silica (quartz) needle coated with polyimide. These materials are resistant to most acids, bases and organic solvents. To avoid dust contamination, we recommend pre-rinsing the Multibarrel Manifold and Tip with distilled water. Also, it is good practice to discard the first few microliters of solution before using the device. The Multi-barrel Manifold and Removable Tips are shipped non-sterile. They can be chemically sterilized or autoclaved. However, repeated autoclaving may weaken the adhesive bond between the Luer-lock fitting and the needle.

### Maintenance

You can expect several years of useful lifetime for your tip if you wash it daily. Use a syringe or vacuum to pull first water, then alcohol three times each through the tip. If the Multibarrel Manifold Tip is filled with pure salt solution, leaving it in the syringe overnight will not usually cause the tip to block. However, if it is used for high viscosity fluids, flushing after each use is recommended.



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