

## CARING FOR PROBE TIPS AND PROBE HOLDERS

### Abstract

Through years of probing experience, the Micromanipulator Company has developed many different probe tips and probe tip holders designed to meet a wide variety of probing applications. Engineers often ask the question: "How should I care for my probe tips and holders?"

This Application Note discusses the process of caring for your probe tips and holders to insure their quality. Failure analysis and low current applications require the highest quality probes. Their proper maintenance will help retain the initial quality of this vital link in the test process. Probe tip construction, protection against corrosion, and cleaning for both probe holders and tips will be discussed in detail. The *Probe Tip Reference Chart* on the reverse side illustrates some probe tip model numbers, construction materials, and suggested applications.

### Probe Tip Construction

To properly clean and care for probe tips, it is important to know what material is used in the construction of the probe tip.

The Micromanipulator Company uses different materials to meet the wide variety of probing applications. The most popular probe tips are constructed using either single material or double material. Probe tips 7B, 7D, 7G, and 7H are single material construction. The 7A, 7C,

7F, and 7X are constructed using two materials for a "shank and tip" style construction. *Figure One* illustrates the "shank and tip" construction style. Additionally, Micromanipulator offers custom designed probe tips and probe tip holders if a standard probe does not meet your specific probing requirement.

### Cleaning Probe Tips

#### Beryllium Copper Tips

To remove deposits from Beryllium Copper probe tip, rinse with de-ionized water using compressed air to dry excess water from the tip. To remove oxide deposits from the tip, wash the tip in a 10% w/w sodium carbonate solution ( $\text{Na}_2\text{CO}_3$ ) and rinse in de-ionized water. Do not dry the tips. Next dip the tip into a 10% v/v nitric acid solution ( $\text{HNO}_3$ ) until a reaction occurs. Rinse the tip in de-ionized water *immediately* after the acid reaction starts. Do not let the reaction continue for more than one second. After rinsing, dry excess water with compressed air.

### All Other Probe Tips

To remove deposits from probe tips other than Beryllium Copper, simply rinse in de-ionized water using compressed air to dry excess water from the tip. To remove oxide deposits, dip probe tips into a 1.0 Normal sodium hydroxide ( $\text{NaOH}$ ) solution for a few seconds. Then, rinse with de-ionized water and dry with compressed air.

### Cleaning Probe Holders

To clean the probe holders, use a methanol solution (either 190 or 200 proof) and apply to the holder tip using a swab or some other suitable applicator. Do not soak the holder body in the methanol solution. After applying the methanol, proceed with baking the shank at a temperature of 200°F-300°F for a minimum time of 6 hours.

### Controlling Corrosion

In order to eliminate the effects of corrosion for both the tips and holders, it is recommended that the original shipping box of the probe tips/probe holders remain sealed and kept in a dry place until ready to use. After opening, use of a desiccator is recommended. If a desiccator is not available, it is recommended that a small desiccator package be used in the bottom of the product box.

Figure 1; Shank and Tip Construction Style



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**Summary**

This application note has explained the proper care of probe tips and shanks to extend the life of your probe tips. Probe tip construction, protection against corrosion, and cleaning procedures have been discussed in detail for the different materials associated with probe tips. Protection against corrosion and proper cleaning procedures are paramount

to maintaining the integrity of test probes and probe holders. The Micromanipulator Company is your partner as you *Probe the Limits of Technology*.

**Probe Tip Reference Chart**

Model #	Material	Tip Radius (mm)	Application
7A	Nickel Shank, 0.005" Tungsten Tip	0.25	Submicron Targets
7B	Tungsten (0.020")	0.50 to 200	General Purpose Probing
7C	Dumet Shank, 0.005" Tungsten Tip	0.35	Lightly Passivated/Oxidized Surfaces
7D	Tungsten Carbide (0.020")	5.00	Cutting
7F	Nickel Shank, 0.001" Tungsten Tip	0.50	Hot Chuck/CV Applications
7G	Tungsten (0.020")	0.50 to 200	General Purpose probing
7H	Beryllim Copper (0.020")	1.00	Low Resistance Probing
7X	Nickel Shank, 0.003" Tungsten Tip	0.10	Submicron Targets