

Technical Note

Advanced user procedures for minimal compression of sensitive samples

Introduction

The Stabilizor™ system has been designed to heat stabilize samples automatically with minimal user interference. However, in some cases the need to avoid structural compression of the samples is greater than that obtained with the ordinary Structure Preserve mode on the Stabilizor instrument. In such cases extra, user dependent, procedures can be implemented to attempt to reduce compression while maintaining thorough stabilization of the tissue. Use these procedures only if you are intimately familiar with the Stabilizor instrument and how it operates, since if done incorrectly they may cause under treatment and insufficient inactivation of enzymes.

Manual control of cavity vacuum

The Maintainer® Tissue has a closed cavity into which a needle is inserting and air is automatically pumped away. The main reason for removing air is to ensure that the upper foil is in direct contact with the samples and to minimize air trapped under the sample. For some soft tissues, *e.g.* brain, the automatic pumping will cause the upper foil to compress the tissue more than what is acceptable for acceptable morphological preservation. However by manually pinching the tube connecting the needle and vacuum system when sufficient contact between the upper foil and the sample has been obtained, a lesser under pressure can be achieved. Monitor the foil and sample carefully as air is being pumped out. When the foil is in contact with the upper part of the sample, stop further pumping by pinching the tube. The instrument will then quickly reach intended vacuum in the tube and insert the sample for heat



Figur 1. The clear plastic tube connecting the cavity, through the needle, with the vacuum system is pinched to stop the cavity from being evacuated and prevent morphological deformation by the upper foil.

stabilization. To perform this operation requires a bit of practice and careful observation. Practice with soft tissue or sponge to get a feel for how the system works and when sufficient vacuum have been achieved without compressing the tissue too much. For large samples, *e.g.* whole brain, when the upper foil is in contact with the sample from the beginning the tube can be pinched and the vacuum pumping stopped almost immediately.

To minimize compression it is also vital to open the cavity directly after stabilization to prevent steam from condensing which create a vacuum and cause the upper foil to compress the sample.

The manual control of the cavity vacuum as described above interfere with normal operations and if done improperly may result in under treatment and residual enzymatic activity. Only resort to this procedures when necessary and make sure you have a thorough understanding of how the system works and how these manual changes to the automated operation may affect the end results.