

# Digitimer

## Brain/Tissue Slice Chamber System



**Maintains brain slices for 10 hours or more on the bench-top.**

**Modular design accomodates submersible or interface chambers.**

**20 years of use in leading labs.**

**Sensitive recordings without electrical interference.**

This unique and versatile brain/tissue slice chamber system offers the investigator two in vitro methods of studying a thin slice of tissue which is bathed by perfusates of interest. The BSC-HT (Haas Top) is an interface-type chamber in which one cut surface of the slice is wetted by a perfusing solution while the other surface is kept moist by a humidified gas mixture. The BSC-ZT (Zbicz Top) is a chamber in which solutions flow transversely to fully submerged slices. Each top unit allows for rapid changeover of fluids which are being investigated and both provide for excellent access to the slices for electrophysiological recording or other observations.

### **No Electrical Interference**

A low noise temperature controller is available (TC202A, pictured above) that utilizes well filtered DC heating current. This allows even the most sensitive electrophysiological recordings such as single channel patch clamping to be made from the slices without electrical interference.

### **Convenient**

Temperature regulated perfusion lines are built in for rapid changeover of superfusing fluids without the need of an external temperature regulated perfusate supply tank.

### **Designed by Experts**

Over twenty years ago, Drs. Haas and Zbicz, two leading electrophysiologists, designed these chambers for use in their own research. Design improvements by Medical Systems over the next few decades have been enjoyed by electrophysiology labs worldwide.

### **Ordering Information**

All components must be ordered seperately. Most reseachers order the BSC-BU base unit with either a Haas or Zbicz top, depending on individual research. The pre-chamber is a very effective accessory for slice preservation, but is not necessary for system operation. We recommend ordering the BSC-ACC-KIT because it contains valuable replacement parts such as screws, fittings and mesh.

### **References**

Zbicz, K.L. & Wright, F.F. "Transient voltage and calcium dependent current..." J.Neurophys. 53, 1038-1058 (1985)  
Haas, H.L. et al. "A simple perfusion chamber for the study of nervous tissue slices in vitro" J. Neurosci Meth 1, 323-325 (1979)



### Base Unit (BSC-BU)

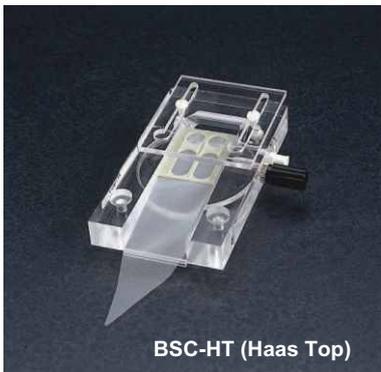
The function of the BSC-BU Base Unit is to warm the superfusing solution. The BSC-BU consists of a double walled cylinder which is usually filled with distilled water and encloses a nichrome heating element. The cavity also contains two separate sets of PVC tubing which can transport one or two superfusing solutions to the slice chamber. The base unit also holds an aerator used to humidify vapour when the Haas Top is employed.

The BSC-BU is mounted on legs which suspend the heating cylinder. This prevents the thermal expansion of the heating cylinder from moving the top unit and slice during temperature changes. The BSC-BU is specifically designed to accept both the BSC-HT and the BSC-ZT top units; this makes for economy and versatility.



### Zbicz Top (BSC-ZT)

The BSC-ZT Zbicz Top is a submersion type chamber in which tissue slices are supported on a stiff nylon mesh. The perfusate flows transversely across both cut surfaces. The steady flow of warmed media across the slightly submerged cut surfaces of the slice is sufficient to keep many tissues alive and responsive for 10 or more hours. The fluid level is set to 1mm above the mesh by a dam at the end of the chamber. The chamber is 6mm wide and the trough is 24mm long; this provides adequate room for slices and instrumentation, yet minimizes the well volume to optimize drug change over time. Fluid overflowing the dam is drained via a vacuum line to waste.



### Haas Top (BSC-HT)

The BSC-HT is an interface-type chamber utilizing semi-submersion principles. It provides for rapid exchange of superfusing fluids, and excellent stability for intracellular recording. Slices rest on a nylon mesh below which a thin sheet of the perfusate of interest flows. The bottom side of the slice is wetted as capillary action saturates the mesh. Slices are oxygenated by a warmed and humidified mixture of 95% O<sub>2</sub> / 5% CO<sub>2</sub> which flows across the top surface of the slice. The BSC-HT has been designed such that, if desired, one can study the effects of two drugs simultaneously. One drug flows down the left portion of the chamber and the second down the right.



### Prechamber (BSC-PC)

The BSC-PC chamber allows several (10-12) brain slices to be stored in vitro for several hours while maintaining excellent viability. A mixture of 95% O<sub>2</sub> / 5% CO<sub>2</sub> is bubbled through physiological saline. This initiates a circular flow and oxygen enriched saline which continuously permeates the slices. Slices remain viable for hours while awaiting transfer to an examining chamber. Gas flow pressure should not exceed 5 p.s.i.

Please note that a range of accessories and spare parts is available. For further information and pricing, please contact Digitimer Ltd.

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