RECORDING CHAMBER DRAWINGS

John S. Pezaris

Computation and Neural Systems
California Institute of Technology
Mail Code 216-76
Pasadena, CA 91125, U.S.A.

ABSTRACT

This paper contains the mechanical drawings used for the recording chambers used in the Andersen Lab. The chambers are designed specifically for the FHC microdrives, but are adaptable to Narishige microdrives. Included are chamber, plug, and removal tool drawings, sufficient for any machine shop to recreate the devices used.

THE DRAWINGS

The following pages contain four mechanical drawings. The first two drawings comprise the recording chamber and its feet. The three feet, made from stainless steel type 316, are to be spot-welded to the chamber, also SS 316, and used to attach the chamber to the underlying substrate (usually skull) with screws. The chamber has been designed to fit over a 19 mm craniotomy, which is typically made by surgical trephination with a manual tool. During implantation, the chamber is fixed in place with self-tapping screws, sealed to the skull with bone wax, silicone elastomer, or similar material, and buried in acrylic. While extensively used as presented, the chamber design could be improved by thinning the walls by 0.010–0.015 inches (with matching increases to the plug diameter), thus reducing the overall weight.

The third drawing is for the chamber plug. The plug, made from Lexan, fits smoothly within the chamber and seals it when the chamber is not in use. A central venting hole, nominally sealed with
hard wax, allows easy insertion and extraction. Plug-to-chamber sealing is obtained with a silicone o-ring set near the lower end of the plug. A pair of undercuts are provided at the top of the plug which allow purchase for the extraction tool.

The fourth drawing is for the extraction tool. The tool, made from brass or preferably stainless steel, is slid under the channels cut on the top of the plug, and used to gently withdraw it from the chamber (slight rotation is suggested while pulling to insure smooth, controlled motion), once the sealing wax has been removed from the plug.

Figure 1: Photograph of chamber, tool and plug. These are prototypes of the recording chamber (left), removal tool (center), and chamber plug (right), which differ slightly from the drawings below.

suck the brain out through a hole in the head

— CHUMBAWAMBA (“Amnesia”, Tubthumper, 1997)