



## Tech Note

## NBC-401 and NBC-402 Nerve Bath Chambers

### Overview

The NBC-401 and 402 Nerve Bath Chambers are assembled from inert materials that withstand corrosion associated with the use of solutions containing electrolytes, like chloride ions. The electrodes are heavy gauge Ag/AgCl wires that are supported on a coated fiberglass board to prevent the bending and breaking of the electrodes. The connectors and plugs that conduct signals to and from the electrodes are gold plated to further aid in conduction. The electrode array and support plate are suspended above the bottom of heavy-duty plastic tray designed to contain the physiological solution used to bathe the nerve, or nerve-muscle preparation.

The NBC-401 is ideal for recording compound action potentials in the student laboratory, from the sciatic nerve of an average-sized frog or leg nerves from invertebrates (Figure 2). The NBC-402 is ideal for recordings from the earthworm nerve chord, bullfrog sciatic nerves, or the frog nerve-muscle preparation (Figure 1).

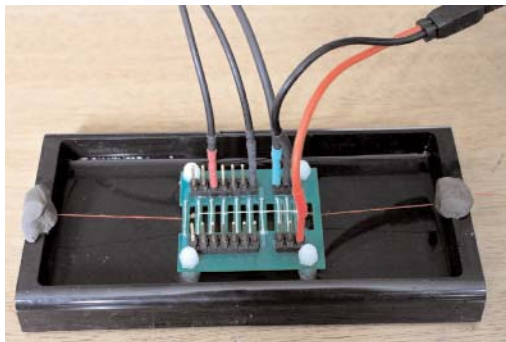


Figure 1: The NBC-402 nerve bath chamber with pin connector lead wires and stimulator cable.

## NBC-401 and NBC-402 Nerve Bath Chambers

### Equipment Setup

1. Plug the sockets on the stimulator lead wires onto the pins of the stimulating electrodes. The two stimulating electrodes, and the ground electrode, are the ones that are closer together at one end of the chamber (See Figure 2):
  - The positive (red) stimulator lead wire goes on the outermost electrode.
  - The negative (black) stimulator lead wire goes on the next electrode.
2. Plug the socket on the ground (green) lead wire onto the pin of the ground electrode. The ground electrode is the one next to the negative (black) stimulating electrode. Remember that the ground electrode should always be between the stimulating electrodes and the recording electrodes.
3. Plug the sockets on the recording lead wires onto the pins of the recording electrodes. The recording electrodes are the ones that are farther apart.
  - The negative (black) recording lead wire goes on an electrode near the ground electrode. Remember that the negative recording electrode is always between the ground electrode and the positive recording electrode. During nerve conduction velocity measurements, it is the negative (black) lead wire that is moved to different recording electrodes.
  - The positive (red) recording lead wire goes on a electrode that is on the distal end of the nerve. Remember that the positive recording electrode is always outside the negative recording electrode. During nerve conduction velocity measurements, the positive (red) lead wire that is not moved.



**Figure 2: The NBC-401 Nerve Bath Chamber with a nerve in place.**

The proximal end of the nerve is on the right side of the chamber where the electrodes are closer together. In order from right to left, the electrode lead wires are connected to the following electrodes: positive (red) stimulating, negative (black) stimulating, ground (green), negative (black) recording, and positive (red) recording which is on the distal (left) end of the nerve.

### Amplifier and Software Setup

The NBC-401 or 402 nerve bath chamber can be used with a variety of amplifiers or recorders.

Through the lead wires supplied with the NBC-400 series, these nerve bath chambers can be connected to the biopotential input and stimulator output of an iWorx recorder, like the IX-214.

Through lead wires supplied with the amplifiers, the NBC-400 series nerve bath chambers can be connected to the NA-100 Neuroamp extracellular amplifier, the ETH-3000 Extracellular Amplifier, or the ETH-256 Two-Channel Combination Amplifier.

Please consult the manuals for these amplifier or recorders for the instructions for connecting these chambers to the amplifiers or recorders, the amplifiers to recorders, and the setup of the software used to make recordings

### Experiments

Experiments using the NBC-400 or 402 newsletter can be found in the iWorx Newsletter archive which is available from the iWorx website:  
<http://www.iworx.com/newsletter/default.htm>.

iWorx Systems, Inc  
One Washington Street  
Suite 404  
Dover, NH 03820  
(800) 234-1757  
(603) 742-2492  
Fax: (603) 742-2455  
[www.iworx.com](http://www.iworx.com)