



NL111 Micro-Electrode Holders – Care & Use

Ag/AgCl Type Holders (NL111-Px-xx)

Holders with an internal pellet must be filled with a chloride electrolyte (typically 3 M KCl) before insertion of a filled pipette. Fill a syringe with the electrolyte and insert the tip of the syringe into the holder bore as far as possible. Inject the electrolyte while slowly withdrawing the tip. If done properly, the holder will be filled completely with no trapped air bubbles. The pipette is then inserted and the holder end cap is finger tightened to make a good seal around the glass. Inspect for air bubbles which must be removed to insure electrical conductivity. The holder should then be wiped dry before attachment to the headstage.

Silver Wire Type Holders (NL111-Wx-xx)

With this type holder, the silver wire is inserted into the filled pipette to make contact with the electrolyte. The holder itself is not filled, but must be kept dry. The portion of the wire that is to be in contact with the solution must first be chloride plated to reduce junction potentials. Care must be taken to avoid scraping or nicking the chlorided wire when inserting the wire into the pipette. Fire polishing the pipette end will minimize this problem and will also extend the life of the rubber seal. Tightening the end cap provides mechanical stability.

Chloriding Silver Wire

The wire should be clean (wiped with alcohol). Chloriding the wire is achieved by making it positive, relative to a solution containing NaCl (0.9%) or KCl (3 M) and passing a current at a rate of 1 mA/cm² of surface area for a minute, or until adequately plated (a 2 cm length of the 0.25 mm wire used in the holders would require 0.15 mA). The color of a well plated wire should be a light gray. Reversal of the polarity for several seconds while plating the electrode tends to yield a more stable electrode.

An alternate method of chloriding is to immerse the wire in bleach until a light gray color is observed (typically 15 seconds to a minute).

Cleaning and storage

Any parts exposed to salt solution should be rinsed with distilled water and dried before storage. Holders with an internal pellet should be thoroughly flushed with distilled using a hypodermic syringe and air dried internally with a clean dry hypodermic syringe or other source of clean warm air. Completely dry the outside and store in a dry environment.

CAUTION: Never use alcohol or solvents to clean the plastic holder parts.

PART REPLACEMENT

Pipette seals

Repeated insertions of the glass pipette can damage or enlarge the rubber pipette seal requiring its replacement. This can be minimized by fire polishing the glass to remove the sharp edge. To replace the seal, unscrew the threaded end cap and remove the seal with a forcep. Replace the seal with a new one. Be sure the seal sits squarely in the holder before replacing the end cap.

Pellets or wires

Unscrew the connector end cap or threaded insert to remove the pellet or wire coupling. Use a forcep to grab the pellet or wire. For pellet holders with a straight body, a pin or wire with a blunt end can be inserted in the glass end to push the pellet out. Replace the pellet or wire and reassemble the holder. Tighten the insert only enough to force the rubber seal into the small bore approximately 1mm.

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