

RG-100 Cell Bottom Assembly Instructions

The RG100 is a glass cell bottom, clamp, and o-ring designed to mount and operate with the K0264 Microcell kit and the QA-CL4 Quartz Crystal Holder (Teflon well cell for the QCA-917/QCA-922) for Electrochemical Quartz Crystal Microbalance (EQCM) applications. This particular cell design orients the quartz resonator in the QA-CL4 holder perpendicular to the solution surface, offering better signal/noise due to the avoidance of compression waves reflecting off the surface of the solution (Lin, Z. and Ward, M.D., *Analytical Chemistry*, 67, 685-693). This orientation also avoids any frequency changes (proportional to mass changes) due to non-selective precipitates settling on the surface of the crystal (Jerkiewicz, G., et al. *Electrochemistry Communications*, 1999, 419-424).

Before placing the QA-CL4 onto the RG-100 cell bottom, place the support cap from the K0264 Microcell Kit onto the cell bottom. The cap will screw onto the K0264 Cell Top (see K0264 Microcell Manual) once the cell bottom is assembled.

The QA-CL4 mounts to the RG-100 cell bottom using the supplied o-ring and clamp (Fig. 1). NOTE: do not over tighten the clamp, as the flange on the RG-100 will break under excessive stress. The clamp should only be tightened lightly to prevent leaks around the o-ring.



Fig. 1

Once the RG-100 Cell Bottom is assembled, the experimental electrolyte can be added either before attachment to the cell bottom, or it can be added after attachment through one of the openings in the cell top. The minimum volume for EQCM experiments with the RG-100 Cell Bottom is 25mL.

Fig 2 shows an assembled cell, with the cell top mounted on a ring stand. Notice in this figure that the cell bottom is resting on the surface of a padded (to minimize vibrations) ring stand plate, and that the clamp is oriented such that it too rests on the surface, level with the bottom of the cell. The QA-CL4 is positioned such that the connectors on the quartz resonator are protruding to either the left or the right of the cell so that the body of the QCA-922 or QCA-917 cable can be oriented on its side for convenient attachment to the cell.

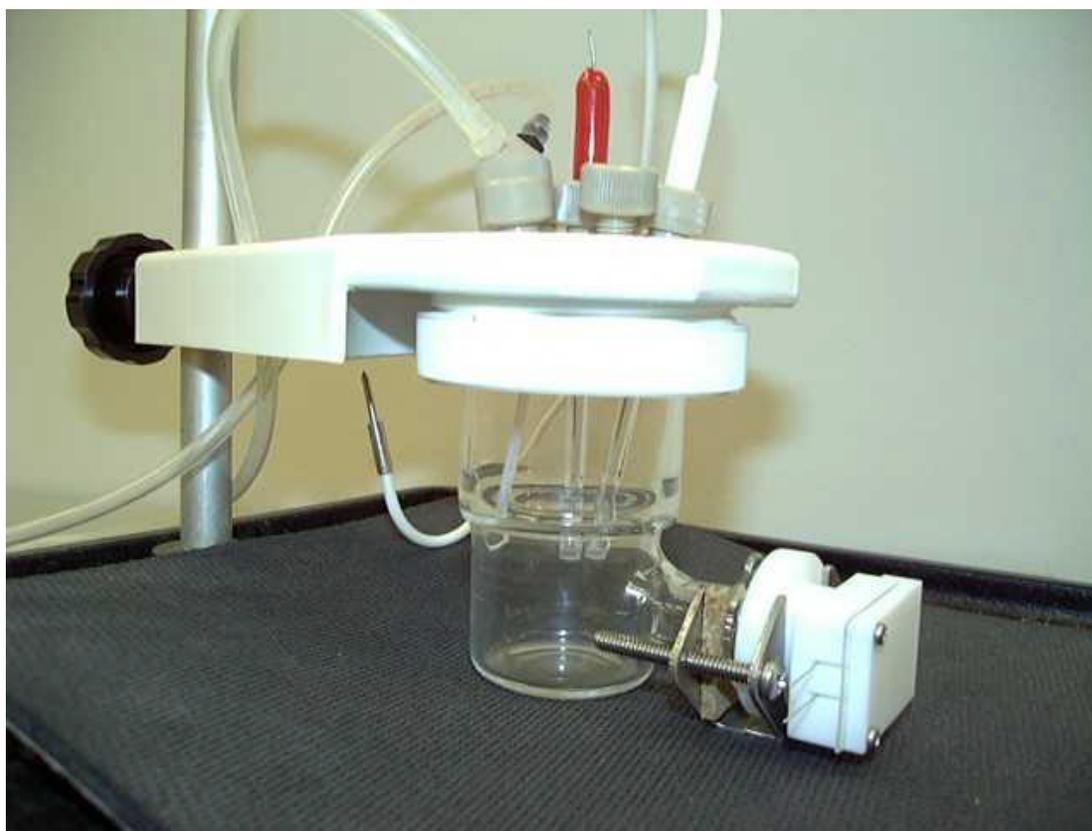


Fig. 2

Fig 3 shows a fully assembled RG-100/K0264 cell mounted inside a Model 325 Faraday Cage with the QCA-922 and Model 263A cell cable (C0345) leads attached to the cell for an EQCM experiment. Once again, take notice of the position and orientation of the clamp and QA-CL4 for easy attachment to the QCA cable body terminus.

