

The family of **Series 40** Quick Change Imaging Chambers have several features in common. These include the use of a #1 coverslip to form the floor of the chamber. In most cases, this same coverslip contains the imaging sample. When viewed with inverted microscopes, images are visualized through a single thickness of glass, usually 0.13-0.17 mm.

Other features include quick and easy disassembly and assembly for replacement of the coverslip. The design of the **Series 40** Chambers incorporates a diamond-shaped bath (where appropriate) which has been shown to produce a laminar flow across the chamber. Since bath volumes are generally small, exchange times are measured in seconds even when flow rates are less than 1 ml/min. **Series 40** Chambers are optimized to be used with Warner's **QE-1** Quick Exchange platform.



### THE RC-40HP

The **RC-40HP** is a small volume imaging chamber featuring rapid solution exchange, short working distances and an open bath. The chamber is designed to be inserted into a **QE-1** allowing a variety of assays to be quickly performed on cultured cells. The **RC-40HP** features a large 308  $\mu$ l working volume with a 19.7 mm aperture on the chamber bottom. This chamber accommodates a 25 mm (#1 or #1.5) coverslip.

### ASSEMBLY

The general procedure for the assembly of the **RC-40HP** is to first prepare the base to accept a sample containing coverslip, then to mount the sample followed by the bath ring, in that order. The chamber can then be inserted into the **QE-1** and further mounted onto your microscope in the usual manner. Prior to beginning assembly verify that all required components are available and thoroughly cleaned.

1. Apply a small layer of vacuum grease around the recess in the black anodized base.

**NOTE:** Vacuum grease can be simply applied to the **RC-40HP** by use of a small, #1 or #2 artist's brush. Brushes can be found in your local art shop, university bookstore, or can be purchased from Warner. (A silicone grease kit is available from Warner; part number 64-0378.)

2. Evenly distribute the grease by placing a spare coverslip into the recess and gently pressing it into position.



3. Remove and discard the spare coverslip. Clean away any grease which may have entered the bath area.
4. Place your sample containing coverslip, sample side up into the pre-greased recess in the chamber bottom.
5. Complete the formation of the chamber by gently pressing the polycarbonate ring into place over the coverslip containing chamber base. Be sure that the lower, innermost o-ring seats securely to the coverslip.

**NOTE:** You may apply a small amount of vacuum grease to the o-ring seal for added security.

## PERFUSION

### Fluid control

The selection of solution source and rate of delivery can be of either manual or automatic design and is left to the user. However, Warner Instruments manufactures several perfusion control systems (such as the valve-driven **VC-8** and **VC-8M Control Systems**) all of which can be used with this application.

The rate of solution delivery can be established either by pump or gravity feed. While these approaches allow good control of the flow rate, Warner Instruments also offers a dedicated solution flow regulator (**FR-50 Flow Regulator**). A reference by Trese Leinders-Zufall describing the advantages of different perfusion control systems is available for download from the Support section of our website (<http://www.warneronline.com>).

### Multiple perfusion solutions

Warner Instruments multi-port manifolds (**MM or ML Series**) can be used to connect up to 8 solution lines to the **RC-40HP**. Connect the manifold output tube to the input port feeding the chamber. Air should be removed from each feed line by pre-filling with its appropriate solution. We recommend making the connection between the manifold and chamber as short as possible to minimize exchange times.

### Suction/Level control

Removal of solution from the **RC-40HP** is usually performed by aspiration. We recommend the use of a vacuum trap to avoid introduction of aspirant into your house vacuum lines.

## MAINTENANCE

Cleaning of the **RC-40HP** should be performed using a dilute detergent solution. Alternatively, Warner instruments has developed a trisodium phosphate (TSP) wash protocol which is effective in cleaning plastic parts. Contact our Technical Support staff or download the protocol in PDF format from our website. (<http://www.warneronline.com>)

**NOTE:** Do not use alcohol, ether or other solvents on plastic parts.