

The Quick Release Imaging Chambers have a unique magnetic closure that facilitates rapid and simple coverslip exchange. These chambers use either #1 or #1.5 thickness coverslips to form the floor of the chamber. In most cases, this same coverslip contains the biological 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 quick release 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. Quick Release chambers share the Series 40 geometry (40mm O.D.), and are thus optimized for use with Warner's **QE-1** Quick Exchange platform.



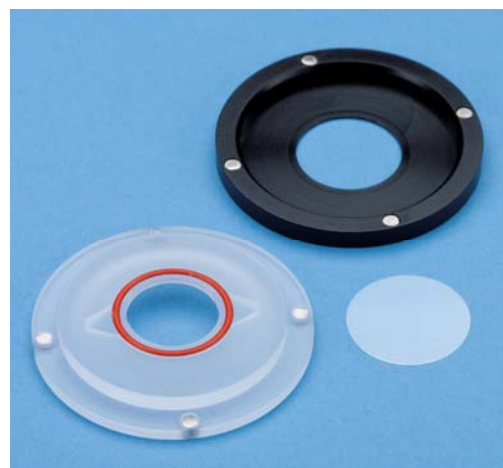
THE QR-40LP, QR-41LP, QR-42LP and QR-48LP

The Quick Release chambers are small volume imaging chambers featuring magnetic closures, rapid solution exchange, short working distances and an open bath. The chambers are designed to be inserted into the **QE-1** platform allowing a variety of assays to be quickly performed on cultured cells.

The **QR-40LP** features a large 308 μ l working volume with a 19.7 mm aperture on the chamber bottom. This chamber accommodates a 25 mm coverslip. The **QR-41LP** is intermediate in dimensions and has a 139 μ l working volume and a 13.3 mm aperture. This chamber accepts 18 mm coverslips. The **QR-42LP** for 15mm coverslips has an 87 μ l working volume with a 10.5 mm aperture. The **QR-48LP** for 12mm coverslips is the smallest coverslip chamber and has an 64 μ l working volume with a 8.9 mm aperture.

ASSEMBLY

The general procedure for the assembly of the Quick Release imaging chambers is to prepare the base to accept a coverslip, then to mount the sample coverslip and the bath ring, in that order. The assembled chamber can then be inserted into the **QE-1** and further mounted onto your



microscope in the usual manner. Prior to beginning assembly make sure all required components are available and thoroughly cleaned.

1. Vacuum grease is used to temporarily tack the coverslip into the chamber base prior to sealing the bath ring. Using a dot brush, apply a small bit of vacuum grease around the recess in the base of the chamber bottom. 3-4 thin spots of grease are sufficient.

NOTE: Vacuum grease can be most simply applied to the **Series 40** chambers by use of a small, #1 or #2 artist's dotting 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. Place your sample containing coverslip, sample side up into the pre-greased recess in the chamber bottom.
3. Complete the formation of the chamber by gently pressing the polycarbonate ring into place over the coverslip containing chamber base. Be sure that the coverslip remains in its recess, that the inner o-ring seats securely to the coverslip, and that the magnets on the top and bottom pieces are aligned to seal properly.

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 Quick Release chamber. 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 Quick Release chamber 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 Quick Release chamber 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. Vacuum grease can be removed by rubbing with a Kimwipe or soft cloth.

APPENDIX

A. Chamber supplies/spare parts

We stock a large selection of supplies for use with Warner chambers. Partial listings of several parts are shown below. Please consult our catalog or website for items not included. Contact our Sales Department for special needs or prices.

Part Number	Order No.	Description	Qty/pk.
Coverslips			
CS-12R	64-0702	Round cover glass, #1 thickness, 12 mm	100
CS-15R	64-0703	Round cover glass, #1 thickness, 15 mm	100
CS-18R	64-0384	Round cover glass, #1 thickness, 18 mm	100
CS-25R	64-0705	Round cover glass, #1 thickness, 25 mm	100
CS-12R15	64-0712	Round cover glass, #1.5 thickness, 12 mm	100
CS-15R15	64-0713	Round cover glass, #1.5 thickness, 15 mm	100
CS-18R15	64-0714	Round cover glass, #1.5 thickness, 18 mm	100
CS-25R15	64-0715	Round cover glass, #1.5 thickness, 25 mm	100
Replacement/Spare Parts for Heater Platforms			
CC-28	64-0106	Heater Cable Assembly	1
TA-29	64-0107	Cable with bead thermistor	1
QE-1	64-0375	Quick change chamber with heated base for RC-40 series chambers	1
DH-40iL	64-0388	Culture dish incubation system	1
O-Rings			
OR-1	64-1491	Replacement o-ring for RC-40LP and RC-40HP	5
OR-3	64-1493	Replacement o-ring for RC-41LP	5
OR-4	64-1494	Replacement o-ring for RC-42LP	5
OR-8	64-1498	Replacement o-ring for RC-48LP	5

B. Specifications

