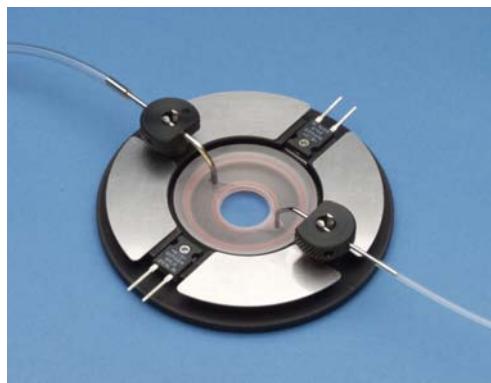


Warner Instruments, Inc.

35 mm Quick Exchange Platform
Model QE-1



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The **QE-1** 35 mm Quick Exchange Platform from Warner Instruments is designed to conveniently provide the rapid replacement of Series 40 chambers and 35 mm culture dishes in the platform base. This versatile system readily accommodates culture dishes from several manufacturers and will adapt to any microscope stage supported by Warner Instruments.

Features of the **QE-1** include:

- ✓ Open design allows easy access
- ✓ Designed for 35 mm dishes and 40 Series chambers
- ✓ Quick exchange of chamber *or* 35 mm culture dish
- ✓ Removable perfusion and suction tube holders
- ✓ Adapters for Willco Wells, Corning, and Falcon dishes available
- ✓ Magnetic stainless steel plates allow attachment of magnetic holders

THIS EQUIPMENT IS NOT DESIGNED NOR INTENDED
FOR USE ON HUMAN SUBJECTS

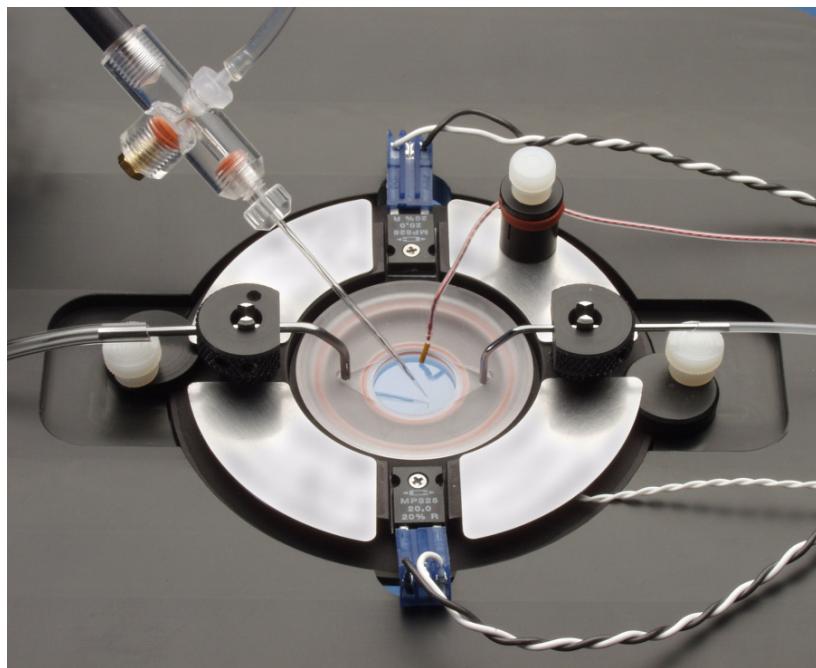
INTRODUCTION

The **QE-1** Quick Exchange Platform is a versatile base for Warner's **Series 40** chambers as well as many popular 35 mm glass bottom cell culture dishes. The platform is at home on both upright and inverted microscopes and includes adjustable perfusion tubes, quick release clamps and resistive heating elements.

The **QE-1** base has a 25 mm diameter aperture for inverted microscope objectives and magnetic stainless steel plates along the perimeter of the platform permits the use of Warner's **MC-1** Magnetic Clamp Kit (which includes a variety of holding tools). Stage adapters are available for all major microscopes.

Removable perfusion and suction tubes allow precise perfusion control in any of the **Series 40** imaging chambers or in 35 mm dishes. The tubes feature set-screw locks for horizontal positioning, and adjustable presets on the vertical for setting the bath height. These adjustments facilitate simple and exact repositioning of both the suction and perfusion tubes following chamber exchange. A newly redesigned suction tube eliminates tidal action and fluid flutter in the bath resulting in quite aspiration.

Resistive heating of the **QE-1** base is provided by Warner's **TC-324B** or **TC-344B** Temperature Controller and a **CC-28** cable. In-line heating of perfusate can be directly achieved using our **SH-27B** or **SF-28** In-Line Solution Heaters.



SETUP

General Comments

The **QE-1** platform is designed to accept any of the Series 40 chambers from Warner Instruments, as well as glass bottomed 35 mm culture dishes manufactured by Willco Wells, Corning or Falcon. **Series 40** chambers are secured into place by the included retaining clips. Glass bottomed culture dishes can be secured by the use of the supplied **QE-1** Clip Hold-downs (4). Optional **AR-4** adapter rings may be needed to ensure a close fit between the culture dish and platform base (see page 6). In all cases, solution flow is provided by the adjustable perfusion and suction tubes.

The **QE-1** comes supplied with removable perfusion tubes and retaining clips. A short length of C-Flex® tubing is also included to facilitate the attachment of flow lines. Additional required components not supplied are a **Series 40** chamber or 35 mm culture dish, and a temperature controller.

In general, a blank chamber or dish is placed into the platform and the position of the perfusion lines adjusted. Then a chamber or dish containing the sample under study is placed into the platform and secured into place. Next, the perfusion tubes are mounted into their respective holders and the heater control lines are attached. Finally, the platform is placed onto the microscope stage and the perfusion solution delivery lines are attached. The assembly is now ready for use.



Assembly

With Series 40 Chambers

Series 40 chambers are ideal inserts for use with the **QE-1** and the platform has been optimized for this application. Warner **Series 40** chambers come in several designs to accommodate different applications (a representative sampling is shown to the right).

1. Begin by removing any installed chambers from the **QE-1** base. Also remove any retaining clips and perfusion tubes.
2. Place a blank **Series 40** chamber into the base.
3. Mount the perfusion tubes and make adjustments for positioning and solution height. The perfusion tubes can now be manipulated without affecting their adjustment.
4. Remove the perfusion tubes from the **QE-1** base and replace the blank **Series 40** chamber with an assembled chamber containing your sample.



5. Secure the chamber into place using the retaining clips.
6. Place the previously adjusted perfusion tubes into position. Attach a small length (approx 1/2 in) of C-Flex® tubing to the ends of the perfusion tubes to facilitate coupling of your perfusion flow lines to the perfusion tubes.
7. Attach the **CC-28** cable assembly to the **QE-1**. The blue connectors **QE-1** attach to the heating elements and the white thermistor goes into the large hole in the side of the **QE-1** (see photo on page 4).
8. Place the **QE-1** into an appropriate stage adapter and place the **QE-1** onto your microscope stage
9. Insert your perfusion flow lines into the C-Flex® tubes attached to the perfusion tubes.
10. The completed assembly is ready for use.

With Glass Bottomed Culture Dishes

The **QE-1** provides an ideal environment for the rapid screening of cell cultures grown in 35 mm culture dishes.

Culture dishes from several manufacturers are supported by the **QE-1**. In general, a culture dish adapter ring must be used to provide a secure, tight fit between the culture dish and the **QE-1** platform. Adapter ring sets are not included with the **QE-1**.

Adapter ring color codes	
Blue	Willco Wells: Models D3512 and D3522
Red	Falcon: 37 mm
Gold	Falcon: 38 mm
Green	Corning: 25000 series



1. Begin by removing any installed chambers from the **QE-1** base. Also remove any retaining clips and perfusion tubes.
2. Place a blank 35 mm culture dish with adapter ring into the base.
3. Mount the perfusion tubes and make adjustments for positioning and solution height. The perfusion tubes can now be manipulated without affecting their adjustment.
4. Remove the perfusion tubes from the **QE-1** base and replace the blank culture dish with an assembled culture dish (with ring) containing your sample.
5. Place the previously adjusted perfusion tubes into position. Attach a small length (approx 1/2 in) of C-Flex® tubing to the ends of the perfusion tubes to facilitate coupling of your perfusion flow lines to the perfusion tubes.

6. Attach the heater control lines to the thermistors on the **QE-1** base.
7. Place the QE-1 into an appropriate stage adapter and place the **QE-1** onto your microscope stage
8. Insert your perfusion flow lines into the C-Flex® tubes attached to the perfusion tubes.
9. The completed assembly is ready for use.

OPERATION

The open format design of the **QE-1** enables easy access for microelectrodes, pipets and perfusion lines. Cell culture dishes and Series 40 chambers can be quickly and easily exchanged without affecting the adjustments of the flow lines.

The open design of the **QE-1** also permits imaging using either upright or inverted microscopes. Warner **Series 20** stage adapters are used to mount the **QE-1** onto most commonly used microscope stages. Contact our Tech Support Department for custom stage adapters.

Resistive heating of the **QE-1** is achieved using Warner's **TC-324B** or **TC-344B** Temperature Controller and a **CC-28** cable. The two blue **CC-28** connectors attach directly to each resistive heating element. Feedback control for the temperature controller is provided via a thermistor (T1) which is inserted into the large hole in the platform base (look under the edge of the stainless steel brackets). We recommend using a drop of mineral oil to insure good thermal contact between the white T1 thermistor and the metal chassis.

The **CC-28** cable's bath thermistor (i.e. T2) can be placed directly in the bath to determine the solution temperature in the region of interest. Heating of perfusate can be achieved using Warner's **SH-27B** or **SF-28** in-line solution heaters which are also controlled via our temperature controllers.

APPENDIX

Cleaning/Maintenance

The **QE-1** is constructed of anodized aluminum and stainless steel. It can be easily cleaned with common laboratory detergents. We do not recommend the use of solvents such as ethyl alcohol (EtOH) as this will likely dissolve the glue holding the stainless steel plates onto the base. For similar reasons, do not autoclave.

Warranty and service

Service

We recommend that all questions regarding service be referred to our Technical Support Department. Normal business hours are 8:30 AM to 5:00 PM (EST), Monday through Friday.

Our offices are located at 1125 Dixwell Avenue, Hamden, CT 06514.

We can be reached by phone at (800) 599-4203 or (203) 776-0664. Our fax number is (203) 776-1278. E-mail us at support@warneronline.com or through the web at <http://www.warneronline.com/contact.html>.

Warranty

The **QE-1** is covered by our Warranty to be free from defects in materials and workmanship for a period of one year from the date of shipment. If a failure occurs within this period, we will either repair or replace the faulty component(s). This warranty does not cover failure or damage caused by physical abuse.

In the event that repairs are necessary, shipping charges to the factory are the customer's responsibility. Return charges will be paid by Warner Instruments.