

## Warner Instruments

### 50/60 mm Quick Exchange Platform Model QE-2



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The **QE-2** Quick Exchange Platform from Warner Instruments is designed to conveniently provide the rapid exchange of 50 and 60 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-2** include:

- ✓ Quick and easy culture dish exchange
- ✓ Accommodates 50 and 60 mm dishes
- ✓ Open design allows easy dish access
- ✓ Removable perfusion and suction tube holders
- ✓ Adapters for Willco Wells and Falcon dishes
- ✓ Magnetic stainless steel plates for attachment of magnetic holders
- ✓ Heated platform
- ✓ Requires a **Series 30** stage adapter

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

## INTRODUCTION

The **QE-2** Quick Exchange Platform is a versatile base for the popular 50 and 60 mm glass bottom cell culture dishes. The platform is at home on both upright and inverted microscopes and includes adjustable perfusion tubes, perfusion tubing, culture dish adapters, and resistive heating elements.

The **QE-2** base has a 36 mm diameter aperture for inverted microscope objectives. A magnetic stainless steel plate along the perimeter of the platform permits the use of a variety of magnetic holding tools. Stage adapters are available for all major microscopes.



Removable perfusion and suction tubes allow precise perfusion control. Tubes are easily positioned on the magnetic platform. This feature facilitates 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 quiet aspiration.

Resistive heating of the **QE-2** 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.

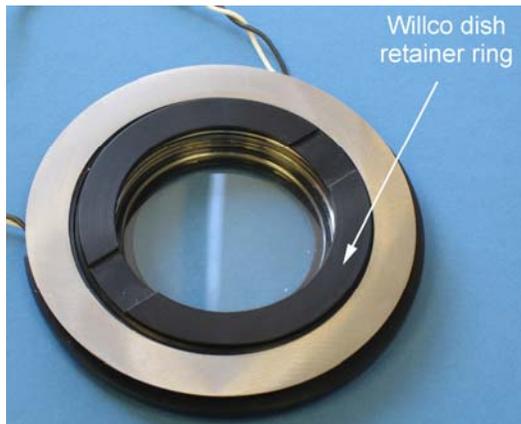
The **QE-2** exhibits a platform outer diameter of 82 mm and requires the use of a **Series 30** stage adapter to mount the platform onto the microscope stage.

## SETUP

### **General Comments**

#### **Adapter Rings**

The **QE-2** platform is designed to accept any of the glass bottomed 50 or 60 mm culture dishes manufactured by Willco Wells, Corning, Nunc, or Falcon. Adapter rings are included to ensure a close fit between the Willco Wells or Falcon culture dishes and the platform base. Nunc and Corning dishes do not require the use of an adapter ring.



#### **Retainer Rings**

All dishes are secured into place by the use of a retaining ring. Two retaining rings are supplied; one for the Willco Wells and Falcon dishes, and one for the Corning and Nunc dishes.

#### **Perfusion tubes**

Solution flow is provided by adjustable perfusion and suction tubes. The **QE-2** comes supplied with removable perfusion tubes and holders. A short length of C-Flex® tubing is also included to facilitate the attachment of flow lines to the perfusion tubes.



## Assembly

The **QE-2** provides an ideal environment for the rapid screening of cell cultures grown in 50 or 60 mm culture dishes. In general, a dish containing the sample under study is secured into the platform, then perfusion and temperature control is put into place, and finally, the assembly is mounted onto the microscope stage.

1. Begin by locating an appropriate adapter ring if using either a Willco Wells or Falcon dish. (As of this writing there are no distinguishing marks between the two adapter rings. However, the ring for the Falcon dish is slightly taller than the ring for the Willco Wells dish.)
2. Test fit the selected ring to the dish. Look to see that the ring fits snugly and does not protrude below the base of the dish.
3. Place the dish (with adapter ring if needed) into the **QE-2** platform.



4. Select the appropriate retainer ring for the dish used. The taller ring is used with Corning and Nunc dishes, and the shorter ring is used with Falcon and Willco Wells dishes. Secure the dish into place by screwing the ring into the platform around the dish.

5. Place the assembled **QE-2** into your stage adapter and connect the heater cables to your heater control system.

6. Place the stage adapter mounted **QE-2** platform onto your microscope.

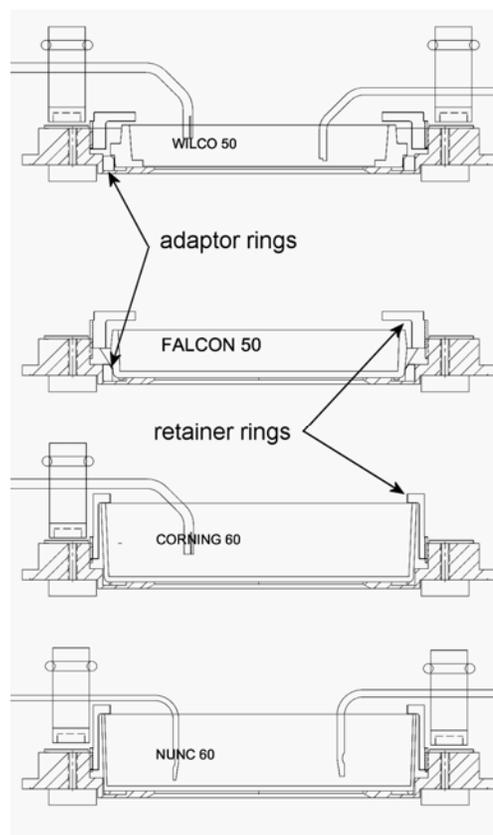
7. Begin perfusion assembly by placing the perfusion tubes into the magnetic holders.

**Note:** The aspiration tube can be differentiated from the perfusion input tube by observing that the aspiration tube has a long slit along its side where it contacts the solution in the dish.

8. Attach your perfusion flow lines to the perfusion input and aspiration tubes. Use the provided C-flex tubing to make a coupling between flow lines and the metal perfusion tubes.

9. Place the assembled flow lines into position by adhering to the magnetic steel ring around the periphery of the **QE-2**.

10. The assembly is now ready for use.



### **Optional chamber inserts**

If you wish to provide a controlled perfusion environment within your glass-bottomed dish, then we recommend the use of Warner's **RC-61** Series chamber inserts.

These reusable and disposable inserts are designed to be placed within a 50 mm culture dish and provide the familiar diamond shaped or slotted bath flow dynamics of our popular **Series 20** Imaging and Recording chambers. Contact our Sales Department for more information.



### **OPERATION**

The open format design of the **QE-2** enables easy access for microelectrodes, pipets and perfusion lines. Cell culture dishes can be quickly and easily exchanged without affecting the adjustments of the flow lines.

The open design of the **QE-2** also permits imaging using either upright or inverted microscopes. Warner **Series 30** stage adapters are used to mount the **QE-2** onto most commonly used microscope stages. Contact our Tech Support Department for custom stage adapters.

Resistive heating of the **QE-2** can be achieved using Warner's **TC-324B** or **TC-344B** Temperature Controller and a **CC-28** cable. Alternatively the **QE-2** heater blocks can be powered using Warner's **TC-124** Temperature Controller. In general, the blue **CC-28** connectors attach to the resistive heating elements via the white connector on the blue/white twisted-pair connecting cables.

Feedback control for the temperature controller is provided via a thermistor (T1) which is inserted into a 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 into 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.