INSTALLING THE PRIOR HR01A ADJUSTABLE STAGE STAND
ON THE OLYMPUS BXWI MICROSCOPE

GENERAL:

This instruction is intended as an aid to install a Prior adjustable height HR01A stage mounting stand onto an Olympus BXWI Microscope that has the appropriate interface for this device. This kit is optimally designed to be used with the Olympus Elevator Kit that includes an extended objective bracket (40mm lift) and a binocular spacer (40mm lift). The Olympus kit may also include a condenser spacer (40mm lift), which may or may not be used. Included with the Prior Installation Kit is a 30mm condenser spacer. The 30mm condenser spacer will work out better than the 40mm Olympus spacer on systems that have forward detectors installed. In those systems, the condenser mount is typically lifted by about 13mm, to allow for the insertion of the forward detector mount below the condenser mount. This additional 13mm lift on those systems that have this feature will require use of the shorter 30mm condenser spacer provided with this kit.

This kit may still be used on systems without these Olympus 40mm lift kits, although it won’t have the same range of travel. If the lift kits are not used, you will find that this kit will still work, with the 30mm condenser spacer provided in the installation kit. When using the condenser, the objective will need to be positioned most of the way up, and the adjustable platform will be positioned almost as low as it can go without hitting the condenser mount.

Spacer plates 10mm thick are also provided as part of the Prior Installation Kit. If the Olympus Scope is mounted to a 10mm thick platform, which is then mounted to the experiment table, the Prior 10mm thick spacer plates should be used under the legs of each tower. (The tower sits on the spacer, and the clamping pieces bolt directly through the 10mm plate, into the top of the experiment bench. Longer than standard screws are provided in the installation kit in both 1/4-20 and 6mm sizes.)

Once the kit is installed, you will find that thin samples can be viewed with the stage moved up most of the available travel. Thicker samples may be viewed by lowering the stage mounting plate. To view very thick samples, it will be necessary to remove the condenser and condenser mount, to obtain the maximum available travel from this stage positioning stand. (The stage mounting plate will hit the condenser elevator knobs before reaching the maximum downward position, unless the condenser mount is removed.)

It is assumed that the technician performing the installation has the needed tools and is familiar with this type of installation. The needed hex key wrenches are provided with the installation kit. It is also assumed that the installation is being performed on an experiment type table with either 6mm tapped holes on a 25mm grid pattern, or 1/4-20 tapped holes on a 1 inch grid pattern. The installation is designed to work with either table top.
INSTALLATION:

Check the Installation Site for Adequate Room

The microscope needs to be far enough back on the experiment table that there are at least 2 rows of mounting holes showing in front of the front edge of the microscope. The platform is 24 inches wide, so about 13 inches is needed on either side of the microscope centerline.

Position the Microscope so that there is adequate installation room around it. The microscope has three mounting holes in each side of the rear “Y” shaped base casting. Use the hole closest to the front of the microscope on each side. These holes are on 150mm centers, 149mm back from the optical centerline of the microscope. These holes will work with a base plate on 25 mm centers, or a base plate on 1 inch centers. (The middle holes do not work, the rear holes will work with 25mm base plates only.)

Install a screw in each of these two forward holes, but don’t tighten it down fully yet.

Position the “Towers” on the Threaded Hole Base

The towers are not all identical, there are two different types (the same assembly is used on opposite diagonals). For the installation to work out properly, you need to place the correct tower type in the correct location. The towers are always installed so that the locking knob is always on the outer left or right surface (on the left if mounted on the left side of the scope, on the right if mounted on the right side of the scope). The screw heads visible on the vertical walls of the towers should face each other. (See photo).

Refer to the picture below. Set up the towers like this, with the knobs to the outside, and the screws on one of the vertical surfaces facing each other. Spread them out so they look like the stage mounting plate will fit roughly in the correct location.

If the Olympus Scope is mounted to a 10mm thick platform, which is then mounted to the experiment table, the Prior 10mm thick spacer plates should be used under the legs of each tower. (The tower sits on the spacer, and the clamping pieces bolt directly through the 10mm plate, into the top of the experiment bench. Longer than standard screws are provided in the installation kit in both 1/4-20 and 6mm sizes.)
Positioning the Towers on the Threaded hole Base

Loosen the locking knob that locks the shaft into position in the tower. Push the shaft down about 1/2 inch, and rotate it clockwise so that the two tapped holes in the top of the shaft are oriented front to back. The screw head, visible in the side of the shaft, near the top, should ideally be oriented facing toward the outside, left or right. This isn't critical, but this is the designed orientation.
Mount the Stage Mounting Plate and Stage Support Blocks

Place the stage mounting plate as shown onto the tops of the tower posts. It may be necessary to adjust the position of the posts to get them at a convenient height, where the plate clears everything on the microscope. It may also be convenient to temporarily remove the condenser and objective from the microscope while doing this work.

The stage plate installs with the 5mm x 16mm Button Head screws and Flat Washers that come with the system. Screw them in, but leave them 1 turn loose for now. Move the towers around as needed to line up the holes.

If you are installing the system on a 1/4-20 tool plate with holes on 1 inch centers, slide the towers out to the outside of the slotted holes in the stage mounting plate. Don’t push them all the way to one side in the slots, leave a little room for adjustment. Tighten the screws mounting the plate to the shafts.

If you are installing the system on a 6mm threaded tool plate with holes on 25mm centers, slide the towers in to the inside of the slotted holes in the stage mounting plate. Don’t push them all the way to one side in the slots, leave a little room for adjustment. Tighten the screws mounting the plate to the shafts.
Install the Tower Clamps

The tower clamps insert through the slots in the left and right sides of the towers, and secure to the experiment table surface with a single 1/4-20 or 6mm screw and flat washer. Both screw sizes are included in the installation kit. The clamps can slide back and forth in the slots in the tower, to allow alignment flexibility. Install the clamps in both sides of all 4 towers, but don’t tighten the screws yet.

Look at the position of the rear of the stage mounting plate. There is a cutout notch in the back of the plate, on the underside, to clear the condenser mount. If the stage plate is pushed down, this recessed surface should come down and bottom out on the top surface of the condenser mount. (To obtain full downward travel for thick samples, the condenser mount is removed.) The front edge of this recess cutout should clear the front edge of the condenser mount by about 1/8 of an inch, or 3mm. Slide the towers as required to get approximately this clearance at the stage mounting plate recess, and center things up left to right. Next, install the condenser into the condenser mount. Check the clearance of the condenser in the condenser cutout. If the large condenser with the filter wheel is being used, make sure you clear the back edge at the lower part of the condenser mount. If you have allowed too much clearance at the rear of the stage mounting plate, you won't clear this large condenser.

When the towers are positioned so that the clearance is correct, proceed to the next step. Do not tighten this tower clamping hardware yet.
Install the Stage onto the Mounting Plate

Place the .625 inch (15.88mm) long round spacers from the installation kit over the four stage mounting holes. Position the stage Y axis so that the mounting holes are accessible from the top surface. Carefully place the stage onto the stage mounting plate as shown, trying to position it over the stage spacers without moving them. The stage attaches through the mounting spacers and screws into the adjustable mounting plate with four M4 x 30mm long socket head screws, included with the installation kit.

Tighten the stage mounting hardware.
Adjustment of the Final Assembly

Adjustments are made at the factory to make sure that the towers and the adjustment legs are true vertical, and that the top surface of each adjustment leg is in a true horizontal plane.

The only adjustment not previously performed (positioning of unit) that needs to be made at the time of installation is to make final adjustment to the tower positions before clamping them in place.

Remove the condenser mount and then position the stage mounting plate as low as it will go. Loosen the large thumb screws on the outside of all of the towers.

Starting with the rear left tower, feel that the tower is loose on the shaft that connects to the stage mounting plate. You should be able to feel the clearance by twisting and wiggling the tower. Now lightly tighten the two socket head screws that lock the tower mounting clamps in place, on this tower. Do not over tighten this hardware. Lightly tightening these screws will provide more than adequate clamping.

Work your way around the assembly from left rear to left front to right front to right rear, repeating this procedure. The idea is that you want to allow the tower to position itself with the shafts fully engaged, within this shaft clearance, then clamp the tower in this position. Correctly positioned, the shafts will have maximum available clearance to allow the table top to move up and down as easily as possible.

OPERATION:

Loosen the knurled knobs that lock the adjustable stage platform, and try moving the stage table up and down. This device contains gas springs which stabilize the motion and provide a lifting assist. They will also prevent the stage platform from being moved quickly. A light, steady pressure, applied more toward the front of the platform than to the rear, seems to work best. The idea is to just provide a steady, even, light force, and pull straight up, or push straight down. Excess force or an unequal pushing or pulling force will twist the device, and make it hard to move vertically. It may take a little practice, but the method is usually learned quickly. If the motion still seems difficult, try repeating the adjustment step, readjusting just one leg at a time.
Completed Assembly