

## Digital Camera Installation

One of the most critical operations when installing a digital camera on a microscope involves ‘parfocalizing’ the system. Parfocality is correct when the image seen on the PC monitor and the image seen thru the microscope eyepiece are both in focus. Adjusting for parfocality is especially important when using low light or fluorescent microscopy techniques. Having both images on the same focus plane will make capturing high quality, focused images much easier (this is due to the delay of the live screen image refresh making focus determination difficult).

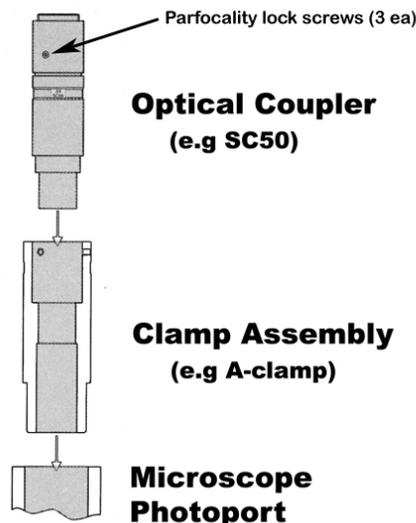
Adjustment procedures vary depending on the optical coupler used to attach the camera to your microscope. You will need a coupler and clamp assembly in addition to the camera unless your microscope has a built-in adapter. The following procedure is for the Optem series couplers we offer on our website. We offer additional models to accommodate most all microscopes. If you have an existing coupler, need adjustment assistance, or require an optical coupler not on the website please contact us at [oem-optical.com](http://oem-optical.com).

### 1) Camera setup:

- First install your digital camera on your PC (refer to camera instructions) and verify operation.
- Thread the c-mount optical coupler securely onto camera. *See illustration below.*
- Install the model specific clamp (e.g. H-clamp) into the microscope trinocular photo port.

**Note:** some microscopes, particularly inverted models, have front or side photo-ports which can also be used in most cases...verify the clamp application is correct for the chosen port.

### Modular Coupler Components



### 2) Microscope setup:

- Set eyepieces to the ‘0’ reference diopter position. Most microscope eyepieces have either a ‘0’ position or a colored ring (usually white) around the eyepiece body as the base reference setting.

- Select a specimen that has sharply defined edges (thin sections are best) and focus the microscope using a 20X or greater objective. Focus for the sharpest (best focused) image. Use eyeglasses during this procedure if you normally use them with the microscope (this is important so that the optics do not get improperly adjusted to compensate for your eyes).
- Verify parfocality of the camera and eyepieces. Look at the camera live viewfinder window image. If the specimen edges on the monitor are not sharp and focused then the video coupler needs adjustment for parfocality. See 'Adjusting Parfocality'.
- When properly setup the camera image and the eyepiece images will both be in focus regardless of the objective lense in use.

### 3) Adjusting Parfocality: *(refer to the illustration above for details)*

- Loosen the 3 parfocality lock screws (but do not remove) on the optical coupler. This will allow the 2 half's of the tube assembly to be turned. The 2 tubes are internally threaded and rotating them will either lengthen or shorten the optical coupler depending on direction rotated.
- Using the previous microscope setup (verify that the eyepiece image is still in focus), hold the camera stationary and rotate (thread) the bottom tube half a full turn in either direction. Look at the image on the PC monitor. If the focus of the image has improved then continue to rotate in the same direction. If the focus was worse then you will need to rotate in the other direction. Repeat the process in half turns until best focus is achieved. **The coupler/camera is now parfocal with the microscope.** Tighten the 3 parfocality lock screws and verify that the eyepiece and monitor image are both in focus.
- Rotate the camera for correct image orientation so that the eyepiece and monitor images are not reversed or flipped. Occasionally this operation will require using the camera software flip/rotate functions to achieve proper direction and orientation.
- The final step is to tighten the clamp to optical tube screws. These are located around the top have of the clamp adapter. This will secure the entire assembly and prevent the camera from rotating during use. Make sure the microscope screw is also tightened to the clamp assembly.
- The microscope is now ready for use. If in the future the parfocality appears to be out, verify that the diopter adjustments haven't been screwed all in or all out by another user.