User Manual

Darkfield & Brightfield Phase Contrast Kit

Model A1PHC2

MicroscopeNet.com

i Caution

1. Keep the phase contrast kit out of direct sunlight, high temperature or humidity, and dusty environments.
2. Do not attempt to disassemble any components, like telescope, objectives or condenser.
3. Keep the kit clean; remove dirt and debris regularly. Accumulated dirt on metal surfaces should be cleaned with a damp cloth. More persistent dirt should be removed using a mild soap solution. **Do not use organic solvents for cleansing.**
4. The outer surface of the optics should be inspected and cleaned periodically using an air stream from an air bulb. If dirt remains on the optical surface, use a soft cloth or cotton swab dampened with a lens cleaning solution (available at the camera stores). All optical lenses should be swabbed using a circular motion. A small amount of absorbent cotton wound on the end of a tapered stick makes a useful tool for cleaning recessed optical surfaces. Avoid using an excessive amount of solvents as this may cause problems with optical coatings or cemented optics or the flowing solvent may pick up grease making cleaning more difficult.
5. Store the instrument in a cool, dry environment. Put the kit back to the storage box when not in use.

1 Parts Illustration

Fig. 1

1. Sliding Selector
2. Phase Contrast Annulus Rings
3. Phase Contrast Condenser
4. Filter
5. Phase Contrast Objectives
6. Centering Telescope

2 Installation & Operation

2.1 Mounting the Phase Contrast Kit

1) Replace the bright field objective(s) on nosepiece with the phase contrast objective(s) **(5).**
2) Loosen the condenser lock thumb screw in ***Fig.2***; take off the condenser from the holder.
3) Insert the phase contrast condenser **(3)** into the condenser holder as shown in ***Fig.3***; tighten the thumb screw.

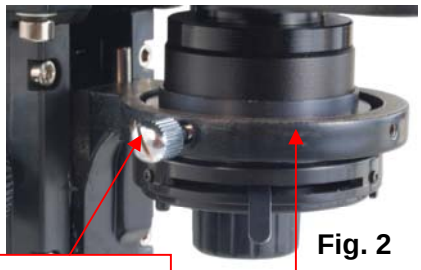

Fig. 2

Note:

There are 2 phase contrast objectives: 10X and 40X, and there are 2 condenser annular rings **(2)** on the sliding selector **(1)**: 10/20 and 40. The corresponding objective, annular ring and iris diagram must work together, i.e., **40X** phase contrast objective must work with **40** condenser annular ring and iris diagram **40** (***Fig.3***) and so on.

Fig. 3

2.2 Centering the condenser ring plate

1) Connect the power cord to the microscope and insert the plug into a power outlet.
2) Turn the desired phase contrast objective into light path. Slide the sliding selector to the corresponding annular ring and turn iris diagram corresponding to the phase contrast objective in the light path.
3) Remove one eyepiece from the microscope eyepiece tube and insert the centering telescope **(6)**.
4) Observe from the telescope. The bright ring and dark ring should be coincided with each other as shown in ***Fig.4 (d)***.
5) If the ring images are not clear, turn the top of telescope until both ring images are in focus.
6) IF the bright ring is still obscure as in ***Fig.4 (b)***, adjust the condenser focusing knob.
7) If the two ring images are not coincided as shown in ***Fig.4 (c),*** adjust the corresponding two centering screws on the phase contrast condenser **(3)**.
8) Remove the centering telescope **(6)** and replace the eyepiece.

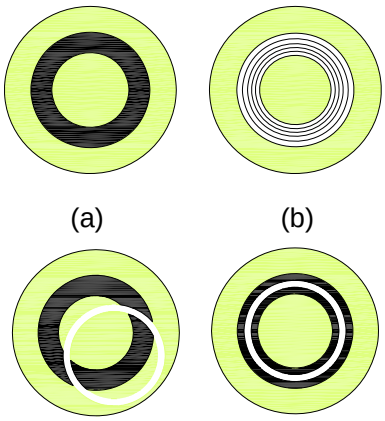

Fig. 4

2.3 Performing the phase contrast observation

Perform the phase contrast observation the same way as a normal brightfield microscope.

Note:

- When change to another phase contrast objective and corresponding condenser ring plate, the focusing and centering of bright ring and dark ring should be repeated following the procedures from 2.2-2) to 2.2-8).

Tips:

- Make the illumination as bright as possible.
- The thinner the specimen, the better the image.
- Slide the sliding selector **(1)** to the brightfield position, the phase contrast condenser will work as a normal bright field condenser.

2.4 Performing the darkfield observation

1) Slide the sliding selector **(1)** to the darkfield position, the condenser will work as a darkfield condenser.
2) Turn iris diagram to 100.
3) Perform the darkfield observation the same way as a normal brightfield microscope.

Note：

- The darkfield condenser works with the 4X, 10X, 40X regular brightfield objectives.
- The darkfield condenser does not work with the regular 100X oil immersion objective.
- The darkfield condenser works with the 100X oil darkfield objective with iris diaphragm AJ100PR ***(sold separately)***.
- ***(optional)*** When using the 100X oil darkfield objective, you will need to drop the immersion oil on the top of the condenser & on the top of the specimen, and adjust the iris ring (***Fig. 5***) to get proper brightness and contrast of view field. The condenser does not work well if no oil drop applied on the condenser.

Fig. 5

- ***(optional)*** If air bubbles exist in the oil, clean the oil from the top of the condenser, the top and bottom of slide with a lens cleaning paper.
- ***(optional)*** When you apply the immersion oil with the 100X objective, do not let the immersion oil to contact with the dry objective lenses (especially the 40X). If the immersion oil is on the dry objectives lens, please use the lens cleaning paper to clean the objectives lens in time. The oil will damage the dry objective lenses.
- ***(optional)*** After observing the specimen with the 100X objective, use the lens cleaning paper to gently clean the 100X objective lens, oil darkfield condenser and the specimen in time.
- ***(optional)*** If it is hard to clean, you need a little bit alcohol to clean the 100X objective lens, oil darkfield condenser and the specimen.

3 Specifications

Model	A1PHC2
Phase Contrast Objective	Achromatic Plan 10X/0.25, 160/0.17 with built-in phase plate Achromatic Plan 40X/0.65, 160/0.17 with built-in phase plate, spring
Condenser	Abbe condenser, NA1.25 with iris diaphragm, filter holder
Sliding Selector	Four positions: 10/20 for 10/20X phase contrast objective DF for darkfield Open for brightfield 40 for 40X phase contrast objective
Centering Telescope	Focusing adjustable