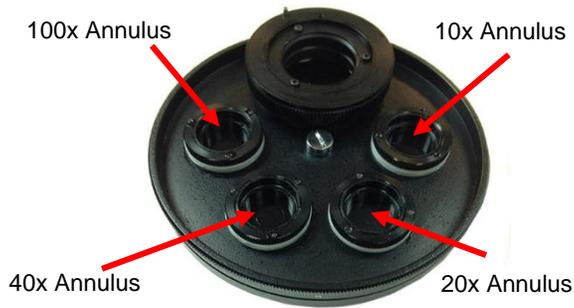




EXC-120 Microscope Series

Phase Contrast Supplement Alignment of the Phase Contrast Components



**Underside View of Phase Turret,
Variable Aperture Diaphragm
and 4 Annuli Holders, Adjustable (X-Y)**

Components

Phase contrast consists of two components for each phase contrast objective installed on the microscope:

Phase Retarder Ring inside each **Ph** objective. This gray Phase ring is observed using the focusable *Phase Centering Telescope* supplied with the system. In the following instruction you will be advised when to substitute the telescope for one of the microscope's eyepieces

Annulus Ring in the condenser. There is a different annulus for each objective—one ring corresponding to each Ph objective. Its purpose is to shape the incoming light into a hollow cylinder. The annuli are mounted in holders that are individually movable in an X-Y manner— so as to be able to align the image of each annulus with the gray phase ring in each objective.



**Front Turret Installed and Positioned
Currently in Optic Axis**

Installation

Install the Ph objectives on the microscope's nosepiece starting with the 10x, and then rotate the nosepiece clockwise and install the 20x, 40x and 100xR oil objectives in numerical order.

Install the Phase Contrast Condenser/Turret into the condenser carrier mounting ring and tighten the set screw with the screwdriver that came with your microscope.

NOTE: The condenser mounting ring has been pre-centered at the factory.

Select the B for brightfield position on the Condenser/Turret by rotating it clockwise until the B clicks into place as shown.

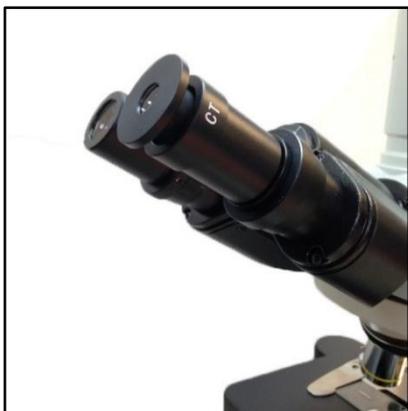
Rotate the nosepiece and **bring the 10x objective** into position.

Raise the Condenser/Turret to its highest position.

Place a familiar "prepared, stained specimen" on the stage and focus the 10x objective on this specimen.



Loosen Eyepiece Set Screw



Centering Telescope Correctly Installed

Phase Plate and Light Annulus Alignment



(a)

Misaligned
to the left

(b)

Misaligned
to the bottom

(c)

**CORRECTLY
ALIGNED**

Alignment

To align, you need to superimpose the *image of each annulus* onto its *corresponding phase ring* in each objective by using the Centering Telescope as described in the sequence below.

Replace one eyepiece with the Centering Telescope:

Remove one of the eyepieces by loosening the set screw slightly (if present), then gently pulling the eyepiece out of the eyetube. Do not remove the set screw completely – they are small and easily lost.

Insert the Centering Telescope into the eyetube.

1. Looking through the Centering Telescope, focus the telescope on the gray 10x Ph phase ring in the objective until the gray ring is sharp.
2. With the 10x objective in position, select the *annulus position* that matches the 10x objective in use by rotating the Condenser/Turret clockwise until the 10x annulus position is in front and clicks into place.
3. Move the 10x annulus on the underside of the Condenser/Turret to align the image of the annulus to the phase ring in the objective as it appears in the diagram below as (c).

Repeat the above procedure 1-3 for each Phase contrast objective.

When alignment of all objectives is completed, replace the Centering Telescope with the eyepiece and retighten the set screw – **be careful not to overtighten the set screw.**