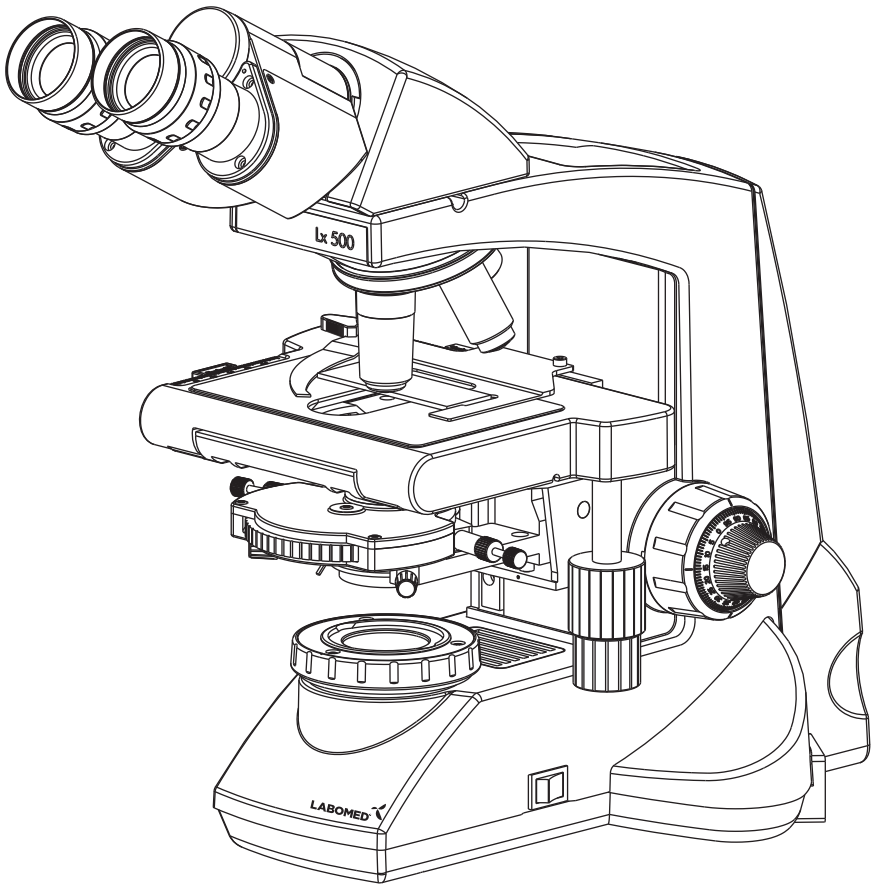
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Lx 500 Phase Contrast Kit
User Manual



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Issue 1.3
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To ensure correct use of this instrument and to avoid injury during operation, read this manual completely before use.

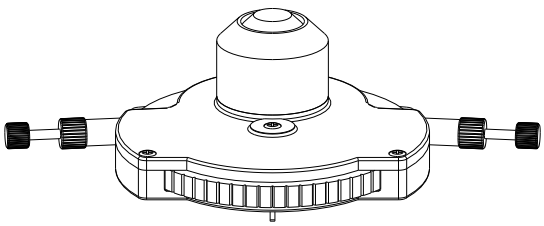
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INTRODUCTION

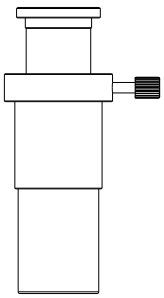
Phase contrast is a light microscopy method developed on the principle that speeding up the direct light path causes destructive interference patterns in the viewed image. These patterns make details in the image appear darker against a light background. To create these interference patterns, a system of rings located both in the objective and in the condenser must overlap. When they are aligned correctly, the light waves emitted by the light source reach your eye one-half of a wavelength out of phase, and details of the specimen are greatly enhanced. Phase contrast is useful only for specimens that are colorless and transparent and usually difficult to distinguish from their surroundings. Such specimens are called “phase objects”. Examples of phase objects include cell parts in protozoa, bacteria, sperm tails and other types of unstained cells.

PACKING LIST

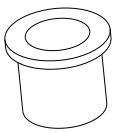
Lx 500 Phase Contrast Kit (9146500)



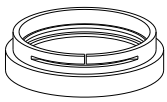
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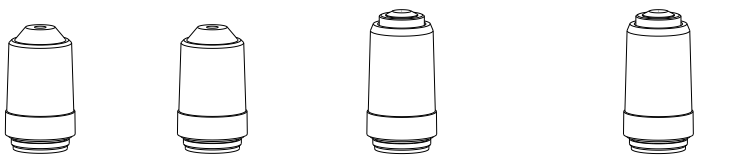
2



3



4



RP PH 10x	RP PH 20x	RP PH 40x (SL)	RP PH 100x (SL, Oil)

5

1) Phase annulus turret (3134045)
2) Centering telescope eyepiece (3126005)
3) Adapter for the telescope eyepiece (9126005-10)
4) Green filter (3126065)
5) Phase contrast objectives (10X-9123010), (20X-9123020), (40X-9123040), (100X-9123100)

Please make sure that all contents of the phase contrast kit are intact. If any physical damage is visible, contact your local distributor.

INSTALLATION

1. Remove the standard brightfield condenser by loosening the two thumbscrews on both sides of the condenser fork, shown as 1 in Fig. 1. As shown in Fig. 2, the Lx 500 phase annulus turret has 5 indexable settings, 0, 10, 20/40, 100 and DF, for different magnifications. Standard has a khurshed thumb these screws and by rotating the phase dial, (Refer Fig. 2), the phase observation. 100 is for 100x observation and DF is for darkfield observation.

2. Fit the phase annulus turret (shown in Fig. 2) in place. When fitting it, make sure that the screw shown as 1 in Fig. 3 on the bottom of the turret is guided into the slot shown as 2 in Fig. 1.

3. Replace the standard microscope objectives with the phase objectives (item 5 of the packing list), in ascending order in the counterclockwise direction.

4. The long "push in to engage" thumbscrews on the phase turret (shown in Fig. 2) provide correct alignment of the phase ring. With these screws disengaged, the phase turret can be set to any annulus (10x, 20x/40x, 100x and DF) by rotating the thumbwheel (see Fig. 2). The '0' setting on the thumbwheel is for brightfield; at this setting the microscope can be used in standard brightfield mode.

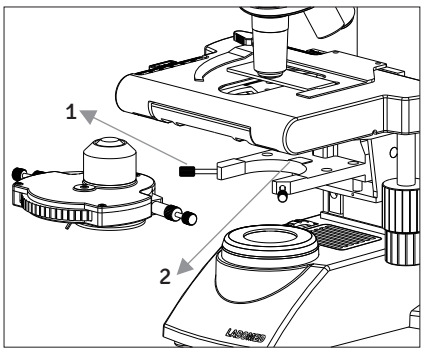


Fig. 1

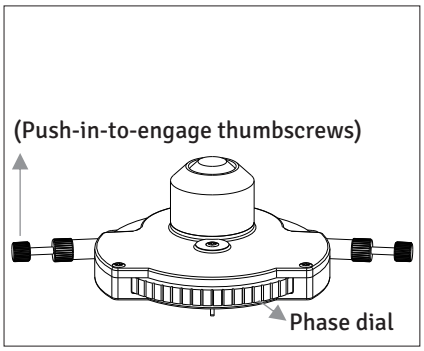


Fig. 2

SET-UP FOR PHASE CONTRAST MICROSCOPY

1. Turn the microscope ON. Set the phase turret to the "0" position and engage the 10x phase contrast objective. While looking through the normal eyepiece, focus, then close the illumination iris diaphragm to its minimum. A circular field will appear in the field of view. Center this circular image with the two thumbscrews on the condenser fork (shown as 1 in Fig. 1). Sharpen the circular image by moving the condenser up and down with the condenser knob, shown as 2 in Fig. 3. The phase turret is now centered with the base condenser and the objective turret.

2. Keeping the 10x phase objective in the light path, open the condenser diaphragm. Place any specimen slide on the mechanical stage and focus the 10x phase objective on the specimen, with the phase turret at '0'. Remove an eyepiece and insert the centering telescope eyepiece in one of the eye tubes of the binocular head (if the inside diameter of the eye tube is 28mm, use the adapter provided with the kit for the telescope eyepiece), shown as 1 in Fig. 4.

3. Loosen the thumbscrew of the telescope eyepiece. While looking into the telescope eyepiece, extend the front lens until the dark ring of the 10x objective in the field of view becomes sharp and crisp. The ring should not appear fuzzy. Tighten the thumbscrew; the image should remain in focus.

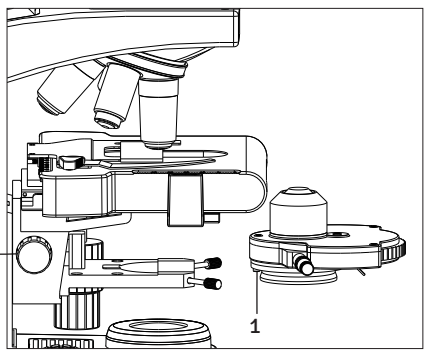


Fig. 3

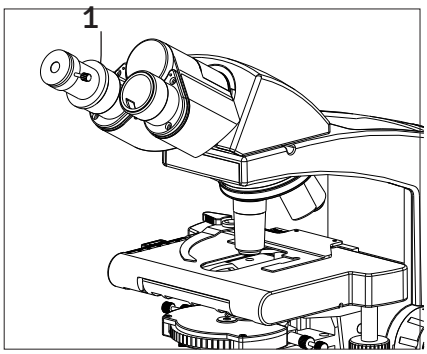
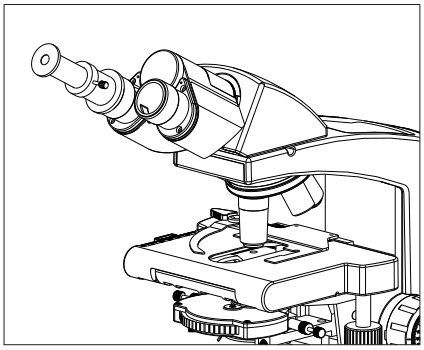


Fig. 4


Fig. 5

CALIBRATING THE INSTRUMENT

4. Pull out the thumbscrews of the phase turret to disengage it, and bring the 10x phase annulus into the light path by turning the thumbwheel (10X appears on the thumbwheel). Push in the thumbscrews to lock the annulus in position.

5. While looking through the telescope eyepiece, you will see two rings, one dark and one bright, as shown in Fig. 5 below. They may not overlap. Align the rings by turning the push-in thumbscrews (clockwise and counterclockwise) until they overlap, as shown in Fig. 6 below.



Fig. 5



Fig. 6

6. Repeat steps 3 to 5 for the 20x, 40x and 100x phase objectives, and make sure that the phase annulus selected on the phase turret matches the magnification of the objective in use.

7. Snap the green filter onto the phase turret from below. Remove the centering telescope eyepiece and put the eyepiece back in the eye tube. Place a specimen slide on the stage. The microscope is now ready for phase contrast observation.

8. Additional feature: the DF annulus marking on the phase turret dial is intended for darkfield use with objective magnifications up to 40x only.

CARE AND MAINTENANCE

- Loose particles can be removed from the surface of the condenser, diaphragm or phase annulus by wiping gently with lens tissue moistened with acetone or methanol.
- Avoid leaving fingerprints on the surfaces of the condenser and phase annulus.
- When the phase contrast kit will not be used for a long time, store it in its original packaging.

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