

# OLYMPUS®

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## INSTRUCTIONS

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# CKX-RCD

## RELIEF CONTRAST CONDENSER

This instruction manual is for the Olympus CKX-RCD Relief Contrast Condenser for use with the CKX41/CKX31. To ensure the safety, obtain optimum performance and to familiarize yourself fully with the use of the condenser, we recommend that you study this manual thoroughly before operating the system. Retain this instruction manual in an easily accessible place near the work desk for future reference.



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# *CONTENTS*

<b>IMPORTANT – Be sure to read this first for safe use of the equipment. –</b>	<b>1-2</b>
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<b>1. NOMENCLATURE</b>	<b>3</b>
------------------------	----------

<b>2. ASSEMBLY</b>	<b>4-5</b>
--------------------	------------

<b>3. RC (RELIEF CONTRAST) OBSERVATION</b>	<b>6-7</b>
--	------------

<b>4. TROUBLESHOOTING GUIDE</b>	<b>8</b>
---------------------------------	----------

# *IMPORTANT*

- This condenser mounts on the CKX41 or CKX31 microscope and enables 10X, 20X and 40X RC (Relief Contrast) observation. (The contrast is adjustable.)
- The orientation of the shadow is constant across different magnifications so the image is always easy to view even when the magnification is changed. The RC slider is equipped with a 360° rotation mechanism so that it can be located in a position that does not come in the way of operation such as injection.

## **1** Getting Ready

1. This manual pertains only to the RC condenser. Be sure to read the instruction manual for the CKX41/CKX31 so that you can obtain comprehensive understanding on the microscope system.
2. This condenser is a precision device. Handle it with care and avoid subjecting it to sudden or severe impact.
3. Take care not to leave dust or fingerprints on the lens surfaces.
4. The stopper mechanisms provided for the functions indicate the limits of motion. Never attempt to go beyond a stopper by applying an excessive force.

## 2 Maintenance and Storage

1. Clean all glass components by wiping gently with gauze. To remove fingerprints or oil smudges, wipe with gauze slightly moistened with a mixture of ether (70%) and alcohol (30%).  
**▲ Since solvents such as ether and alcohol are highly flammable, they must be handled carefully. Be sure to keep these chemicals away from open flames or potential sources of electrical sparks — for example, electrical equipment that is being switched on or off. Also remember to always use these chemicals only in a well-ventilated room.**
2. Do not disassemble any part of the condenser as this could result in malfunction or reduced performance.

## 3 Caution

If the condenser is used in a manner not specified by this manual, the safety of the user may be imperiled. In addition, the equipment may also be damaged. Always use the equipment as outlined in this instruction manual.

The following symbols are used to set off text in this instruction manual.

- ▲ : Indicates that failure to follow the instructions in the warning could result in bodily harm to the user and/or damage to equipment (including objects in the vicinity of the equipment).
- ★ : Indicates that failure to follow the instructions could result in damage to equipment.
- ◎ : Indicates commentary (for ease of operation and maintenance).

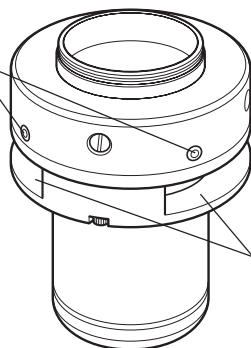
# 1 NOMENCLATURE

## RC (Relief Contrast) Condenser CKX-RCD

NA: 0.45. WD: 45 mm.

RC slider rotation stopper  
screws

(x 4 on the circumference)



RC slider insertion slot

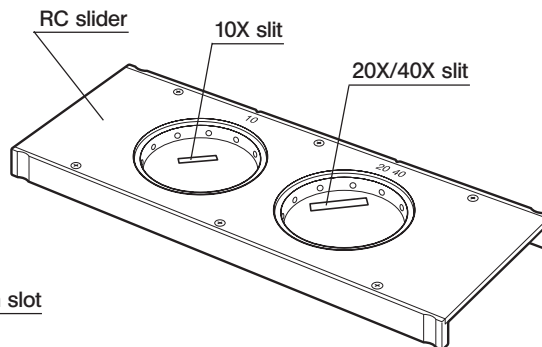
### CAUTION

If this condenser is used in ordinary brightfield observation, the peripheral part of the field may be obscured with a 4X objective.

## RC Objective



	(NA)	(WD)
CPlanN10XRC	0.25	10 mm
LCAchN20XRC	0.40	2.8 mm
LCAchN40XRC	0.55	1.9 mm

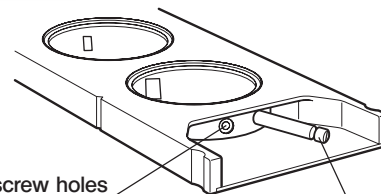


RC slider

10X slit

20X/40X slit

## Back side



Knob mounting screw holes

(x 12 on the circumference)

Slit adjustment knob

Can be inserted in one of the 12 screw holes on the circumference.

# 2 ASSEMBLY

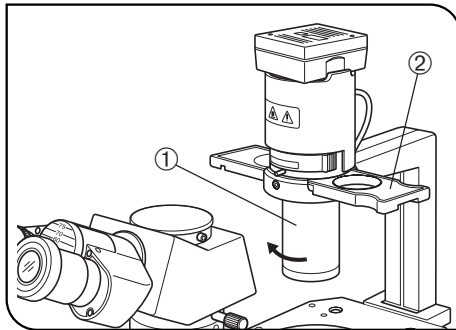


Fig. 1

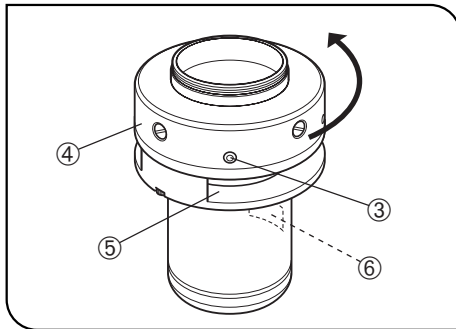


Fig. 2

## 1 Attaching the RC Condenser

(Figs. 1 &amp; 2)

1. Remove the existing condenser ① by turning it in the direction of the arrow.
2. If a phase contrast slider ② is attached, remove it.
3. Using the Allen wrench provided with the microscope, loosen lightly the four RC slider rotation stopper screws ③.
4. Hold the RC condenser by the top ④ and screw it into the position of the condenser removed in step 1 by turning the top in the direction of the arrow.
5. Decide the orientation of the RC slider insertion slot ⑤ and secure the RC condenser with the stopper screws ③ (it is enough to tighten at least two screws that are easiest to access).

If you decide to position the RC slider insertion slot on the left or right seen from the front (lateral position), set it so that the product name label ⑥ comes on the rear side.

- Lateral position: Standard positioning that is easy for operation.
- Vertical and other position: Use this positioning when the lateral position cannot be used because of injection, etc.

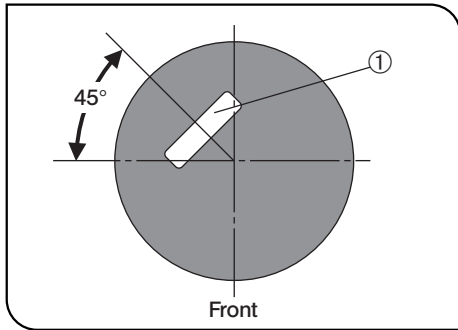


Fig. 3

## 2 Inserting the RC Slider

(Fig. 3)

### Insertion when the slot is in the lateral position

Hold the RC slider so that the indication (10, 20 or 40) comes on the deep of the insertion slot and insert it until it clicks.

### Insertion when the slot is in the vertical or other position

1. Align the indication (10, 20 or 40) on the RC slider with the product name label side and insert it until it clicks.
2. To enable observation, the slit ① of the RC slider must be adjusted to the position as shown in Fig. 3. Use the following procedure for the adjustment.

### Adjustment procedure

- Remove the slit adjustment knob by turning it counterclockwise. (If you cannot loosen it, use a flat-blade precision screwdriver that is to be prepared by yourself.)
- Turn the slit frame to the position shown in Fig. 3.
- Screw in the adjustment knob into the center screw hole on the slit frame. (Tighten firmly using the flat-blade precision screwdriver.)

## 3 Attaching an RC Objective

Mount the specified RC objective on the revolving nosepiece.



# 3 RC (RELIEF CONTRAST) OBSERVATION

☉ With this observation, the aperture iris diaphragm of the CKX-RCD should be open. Turn the lever ① fully counterclockwise to open it. (Fig. 4)

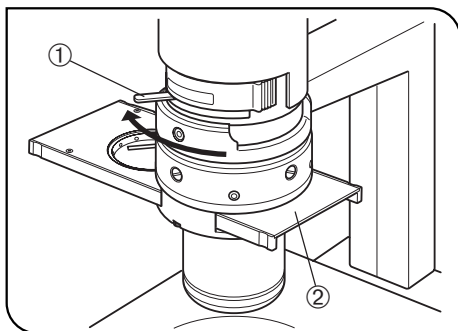


Fig. 4

1. Gently slide the RC slider ② with the 10X slit until the click position. (Fig. 4)
2. Engage the 10X RC objective into the light path and bring the specimen into focus.

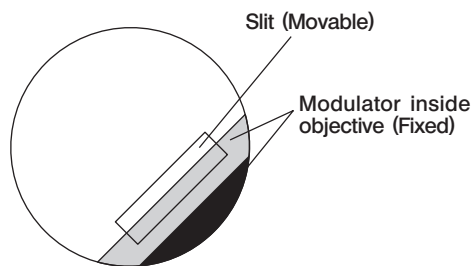


Fig. 5

3. Remove an eyepiece from the eyepiece sleeve and look into the sleeve. The modulator and slit are visible as shown in Fig. 5.
- ☉ If they are hard to view, it is recommended to use the optional CT-5 centering telescope.

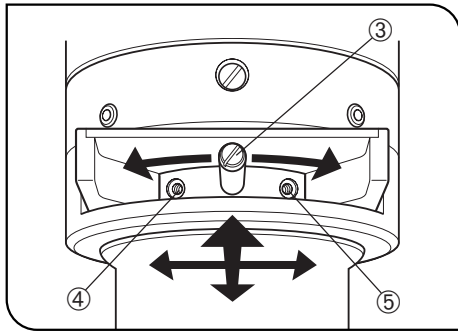


Fig. 6

4. Move the slit adjustment knob ③ to the front, rear, left and right (Fig. 6) so that the slit is visible in the standard position shown in Fig. 5.  
If the motion in the rotary direction is insufficient, remove the knob ③ and insert it to the adjacent screw hole ④ or ⑤.
5. Attach the removed eyepiece to the eyepiece sleeve and observe the specimen.  
During adjustment, moving the slit adjustment knob ③ little by little varies the contrast of observation image little by little. Set the knob to the position giving optimum contrast.
6. When using the 20X objective, perform observation in the same procedure as steps 1 to 5 above.  
For the 40X objective, since the common slot is used for 20X and 40X, the slit adjustment is not necessary provided that the slit adjustment for 40X has been completed.

# 4 TROUBLESHOOTING GUIDE

Under certain conditions, performance of the unit may be adversely affected by factors other than defects. If problems occur, please review the following list and take remedial action as needed. If you cannot solve the problem after checking the entire list, please contact Olympus.

Problem	Cause	Remedy	Page
The specimen cannot be observed in 3D or the contrast is weak.	A wrong slit is engaged in the light path.	Engage the slit matching the RC objective in use in the light path.	6
	An ordinary objective is engaged in the light path.	Engage a RC objective in the light path.	6
	The slit position is not adjusted properly.	Adjust the slit position.	6/7
The entire field of view is obscured.	The aperture iris diaphragm is stopped down.	Open the aperture iris diaphragm.	6

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