OLYMPUS®

SZX-ILLC
LG-DF

INSTRUCTIONS

SZX COAXIAL VERTICAL ILLUMINATOR

This instruction manual is for the Olympus SZX coaxial vertical illuminator. To ensure the safety, obtain optimum performance and familiarize yourself fully with the use of this equipment, we recommend that you study this manual thoroughly before operating the equipment. Retain this instruction manual in an easily accessible place near the work desk for future reference.

This publication is printed on 100% recycled paper

AX7191

IMPORTANT

1 Getting Ready

1. This manual describes the SZX coaxial vertical illuminator only. Before using this equipment with the SZX microscope and light source unit, make sure that you have carefully read and understood the corresponding manuals, and understand how to use all components of the microscopic system in combination.
2. The coaxial vertical illuminator is a precision instrument. Handle it with care and avoid subjecting it to sudden or severe impact.
3. To avoid breaking the light guide fiber (this reduces the amount of light available), use the light guide with bending radius of 60 mm or more.
4. Do not use the coaxial vertical illuminator where it may be subjected to direct sunlight, high temperatures and humidity, dust or vibrations.

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 use organic solvents to clean non-optical components. If smudges are difficult to clean, wipe them with a soft cloth slightly moistened with a diluted neutral detergent.
3. Never disassemble any part of the unit as this could cause malfunctions or reduced performance.

3 Caution

If the equipment 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 operate 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).

CONTENTS

1	USABLE OBSERVATION MAGNIFICATIONS	1
2	NOMENCLATURE	2
3	ASSEMBLY	3
4	SUMMARY OF OPERATION PROCEDURE	6
5	OPERATION	7
6	TROUBLESHOOTING GUIDE	9

1 USABLE OBSERVATION MAGNIFICATIONS

The following table lists usable objectives and observation ranges (when 10X eyepieces are used).

■ **Total magnification when the coaxial vertical illuminator is used:**

SZX-ZB12
SZX-ZB9

$$\text{Total magnification (A)} = \frac{\text{Magnification reading on the zooming knob (B)}}{10} \times 1.5 \times \text{Eyepiece magnification}$$

SZX-ZB7

Total magnification (A) = Zoom magnification indication (C) x 1.5 x Eyepiece magnification

Zoom Microscope Body SZX-ZB12		
Objective	Magnification (A)	Magnification Reading (B)
DFPLFL0.3X	36X or more	24X or more
DFPLFL0.45X	12X or more	8X or more
DFPLFL0.5XPF	15X or more	10X or more
DFPLAPO1XPF	10.5X or more	7X or more
DFPLAPO1.2XPF	55X or more	36.6X or more
DFPLFL1.6XPF*	96X or more	64X or more
SZX-AL20X	150X or more	100X or more

	Zoom Microscope Body SZX-ZB9		Zoom Microscope Body SZX-ZB7	
Objective	Magnification (A)	Magnification Reading (B)	Magnification (A)	Zoom magnification (C)
DFPL0.5X-4	30X or more	20X or more	38X or more	2.5X or more
DFPL0.75X-4	19X or more	12.5X or more	24X or more	1.6X or more
DFPLAPO1X-4	12X or more	8X or more	15X or more	1X or more
SZX-ACH1X	15X or more	10X or more	19X or more	1.25X or more
SZX-ACH1.25X	9.5X or more	6.3X or more	12X or more	0.8X or more
DFPL1.5X-4	30X or more	20X or more	12X or more	0.8X or more
DFPL2X-4*	38X or more	25X or more	30X or more	2X or more

◎The above data is applicable to specimens with mirror-type surfaces. Ordinary specimens can be observed at magnifications lower than those listed above.

* Aberrations produced by the quarter-wave plate cause resolution to degrade.

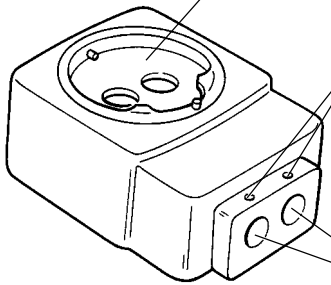
2 NOMENCLATURE

Coaxial Vertical Illuminator SZX-ILLC

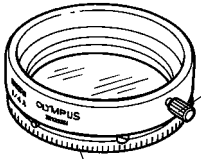
Daylight filter
(for color temperature conversion)

30.5S-LB80

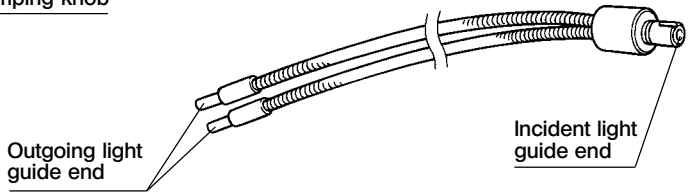
30.5S-LBD



Quarter-wave plate



Branched Flexible Light Guide LG-DF

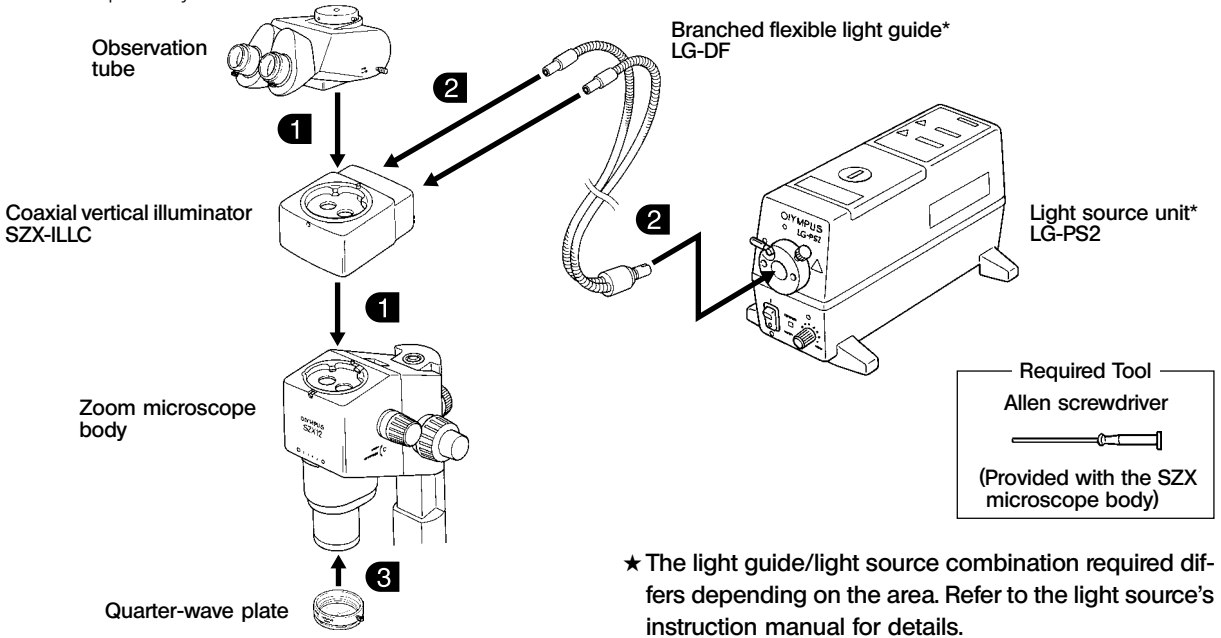


3 ASSEMBLY

The diagram below shows how to assemble the various modules of this equipment. The numbers in the diagram indicate the order of assembly.

★ **Before assembling, make sure that all parts are free of dust and dirt, and avoid scratching any parts or touching the glass surfaces.**

◎ Only a limited number of intermediate attachments can be mounted. However, the SZX-ILLC is not included in this group, so it is possible to mount the SZX-BS beam splitter or SZX-APT arrow pointer on it. Be sure to mount the SZX-ILLC directly on the zoom microscope body.



★ The light guide/light source combination required differs depending on the area. Refer to the light source's instruction manual for details.

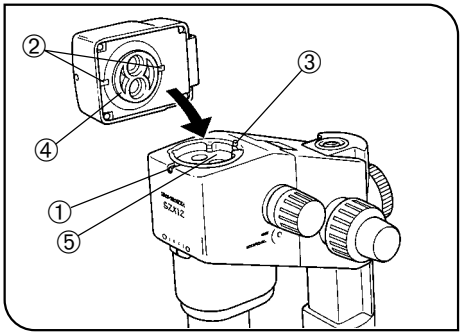


Fig. 1

1 Mounting the Coaxial Vertical Illuminator (Fig. 1)

1. Loosen the observation tube clamping screw ① with the supplied Allen screwdriver and remove the observation tube.
2. Align the positioning groove ② on the coaxial vertical illuminator with the positioning pin ③ on the microscope body. Then insert the dovetail ④ at the bottom of the coaxial vertical illuminator into the dovetail mount ⑤ on the microscope body.

★**The coaxial vertical illuminator can also be mounted in the opposite orientation to that shown in Fig. 1. However this orientation is not recommended because it makes observation difficult.**

3. Tighten the observation tube clamping screw ① on the microscope body with the Allen screwdriver.
4. Mount the observation tube on the coaxial vertical illuminator.

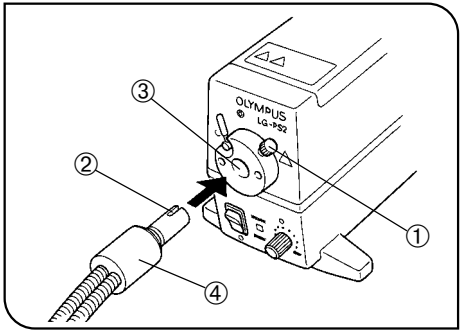


Fig. 2

2 Mounting the Branched Flexible Light Guide (Figs. 2 & 3)

1. Loosen the clamping knob ① on the light source unit. While positioning the incident light guide end ② of the light guide so that the notch faces upward, insert it into the light guide mount ③ until the light guide grip ④ touches the mount. Then tighten the clamping knob ①.

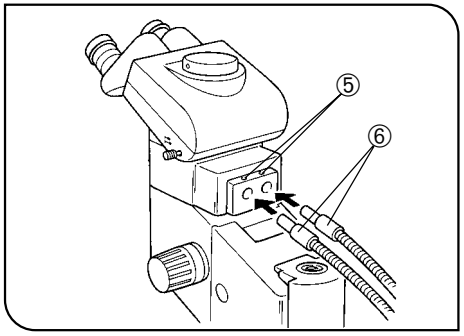


Fig. 3

2. Loosen the light guide clamping screws ⑤ on the coaxial vertical illuminator with the Allen screwdriver. Insert the outgoing end of the light guide ⑥ until it stops (the force required for insertion will increase in the middle due to a spring). Tighten the clamping screws ⑤.

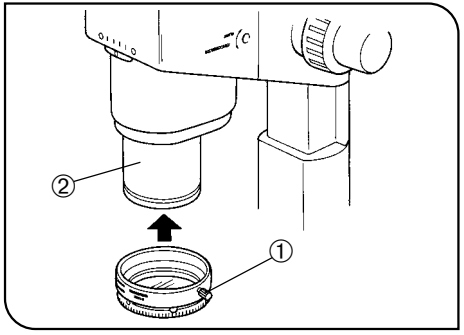


Fig. 4

3 Mounting the Quarter-Wave Plate (Fig. 4)

★The quarter-wave plate is not used when the SZX-AL20X auxiliary objective is in use.

1. Loosen the quarter-wave plate clamping knob ①.
2. Fit the quarter-wave plate onto the tip of the objective ② and secure the clamping knob.

★The quarter-wave plate should be mounted so that the clamping knob is on the right when seen from the front of the microscope (i.e., so that the module indication faces the front).

4 SUMMARY OF OPERATION PROCEDURE

Preparation

See

1. Check that the required modules are mounted. (Page 4 & 5)
2. Adjust the orientation of the microscope body and the tension of the coarse focus adjustment knob.*
3. Turn on the main switch of the light source unit and adjust the brightness.*
4. Adjust the orientation of the quarter-wave plate (using the rotary ring on the tip when the SZX-AL20X is in use). (Page 7)

Observation Procedure

1. Place a specimen on the stage.
2. Adjust the brightness to an easy-to-observe level.*
3. Turn the quarter-wave plate rotation annulus to select (turn the rotary ring on the tip when the SZX-AL20X is used) the easy-to-observe orientation. (Page 8)
4. Observe the specimen with the standard observation procedure.*

* Refer to the instruction manuals of the SZX microscope and LG-PS2.

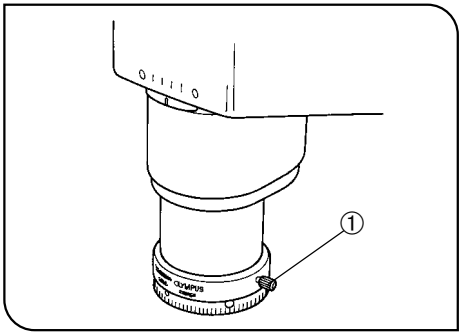


Fig. 5

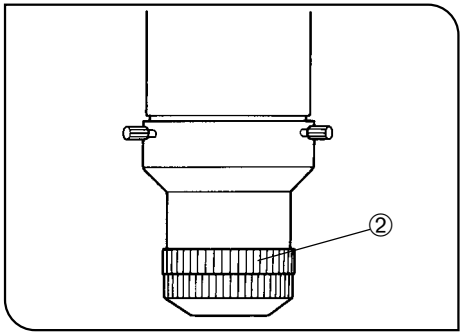


Fig. 6

1 Adjusting the Quarter-Wave Plate Orientation (Figs. 5 & 6)

★If the quarter-wave plate is not positioned properly, flare may be produced even inside the usable observation area.

1. Slightly loosen the quarter-wave plate clamping knob ①.
2. Adjust the quarter-wave plate orientation so that the clamping knob is exactly to the right side of the microscope when seen from the front (i.e., so that the module indication faces the front).

When the SZX-AL20X is in use

- The rotary ring ② on the distal end cap controls the quarter-wave plate. While looking into the eyepiece, turn the rotary ring to brighten the field of view.

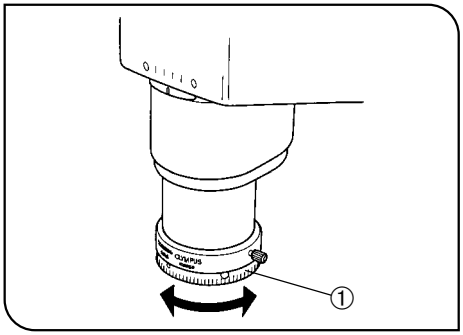


Fig. 7

2 Adjusting the Brightness (Fig. 7)

Adjustment according to light source bulb voltage	Adjust brightness by turning the brightness adjustment knob on the light source unit.
Adjustment according to iris aperture	Adjust brightness by turning the iris aperture lever on the light source unit.
Adjustment using quarter-wave plate (Effective only when the specimen is not polarizing)	Adjust brightness by turning the quarter-wave plate rotation annulus ①. When the SZX-AL20X is in use, turn the rotary ring.

3 Observing the Specimen

A) Observing an IC chip, wafer, etc.

1. Brighten the field of view by turning the quarter-wave plate rotation annulus (or the rotary ring when the SZX-AL20X is in use).
2. If the field of view is too bright, adjust the brightness as described in 2 above.

B) Reflected light polarized observation of liquid crystal, etc.

1. Perform Cross-Nicol observation (with the darkest field of view).
2. For accurate Cross-Nicol adjustment, place a flat, mirror-surfaced specimen on the specimen holder and make the field of view as dark as possible by turning the quarter-wave plate rotation annulus (or the rotary ring when the SZX-AL20X is in use).
3. Observe the specimen by rotating it on a horizontal plane.

6 TROUBLESHOOTING GUIDE

Under certain conditions, performance of this equipment may be adversely affected by factors other than defects. If a problem occurs, please review the following list and take remedial action as needed.
If you cannot solve the problem after checking the entire list, please contact your local Olympus representative for assistance.

Problem	Cause	Remedy
Field of view is not evenly illuminated.	The light guide is not mounted properly.	Mount the light guide properly.
	The bulb of the light source unit is not mounted properly.	Mount the bulb properly.
Color reproduction in the photography is poor.	The brightness control of the power transformer is not set to the maximum position.	Set the brightness control to the maximum position.
	The filters (30.5S-LB80 and 30.5-LBD) are not used (when a daylight type film is in use).	Mount the filters (30.5S-LB80 and 30.5-LBD) on the LG-PS2 light source unit.
Contrast is poor.	The quarter-wave plate is not adjusted.	Adjust the plate. (Page 7)
The view is noticeably different between the left and right fields of view.	The quarter-wave plate clamping position is not adjusted properly.	Adjust the clamping position correctly. (Page 7)

OLYMPUS®

OLYMPUS CORPORATION
2-43-2, Hatagaya, Shibuya-ku, Tokyo, Japan
OLYMPUS EUROPA GMBH
Postfach 10 49 08, 20034, Hamburg, Germany
OLYMPUS AMERICA INC.
2 Corporate Center Drive, Melville, NY 11747-3157, U.S.A.
OLYMPUS INDUSTRIAL AMERICA, INC.
One Corporate Drive, Orangeburg, NY 10962, U.S.A.
OLYMPUS SINGAPORE PTE LTD.
491B River Valley Road, #12-01/04 Valley Point Office Tower, Singapore 248373
OLYMPUS UK LTD.
2-8 Honduras Street, London EC1Y OTX, United Kingdom.
OLYMPUS AUSTRALIA PTY. LTD.
31 Gilby Road, Mt. Waverley, VIC 3149, Melbourne, Australia.

Printed in Japan 2004 01 M 007–①