

COAXIAL VERTICAL ILLUMINATOR
SZ-CHI
REPAIR MANUAL

OLYMPUS

CONTENTS

A. OUTLINE OF PRODUCT

- 1. Outline of Merchandise A-1
- 2. Features A-1
- 3. Using Conditions A-1

B. INSPECTION STANDARD B-1

C. REPAIR PROCEUDRE

- 1. Optical Adjustment C-1

D. SPECIAL TOOLS

- 1. Special Tools D-1
- 2. Adhesives D-1

1. Outline of Merchandise

This is attached to a tube body for observing a flaw, pattern, interference color, etc. which can not be seen with ordinary illumination. It is used in the semiconductor and metal industry fields.

2. Features

- (1) Polarizing plate and quarter wave plate are provided to illuminate a specimen along the observation optical axis. This enables observation of a flow on metal surface, IC chip circuit, liquid crystal pattern, etc. which can not be observed before.
- (2) Interference color is created on a thin film like a metal microscope, and the IC circuit pattern structure can be observed with sharp contrast.
- (3) Specimen such as an ore which has polarization can be observed easily with a vertical polarizing light.
- (4) Incident polarizing state is the same in left and right, the brightness and color differences are minimum in the left and right optics.
- (5) The illuminator is mounted compact on a tube body, and not obstructive when attached to various industrial equipments.

3. Using Conditions

- (1) Operating temperature: 0 ~ 40°C (32~104°F)
- (2) When using an auxiliary objective lens, attach the quarter waver plate to its bottom end.
- (3) Usable auxiliary objective lenses and zoom magnifications are as shown in the table below.

	SZ 30.40			SZ 60		SZ 11	
	10x	20x	30x	10x	20x	10x	20x
Microscope only	△	△	△	○	○	○	○
0.25 x	x	x	△	/		/	
0.3 x	x	△	△	/		/	
0.4 x	x	△	△	/		/	
0.5 x	x	△	△	△	△	△	△
0.62 x	△	△	△	/		/	
0.75 x	△	△	△	/		/	
1.5 x	△	△	○	△	○	△	○
2 x	○	○	○	△	△	△	○

○ ... Visual field is met in all the zoom range.

△ ... Visual field is met with high zoom magnification.

x ... Visual field is not met in all the zoom range.

- (4) Be sure to attach the diopter adjustment ring to the eyepiece sleeve.
- (5) Use TL2 transformer.
- (6) When observing a specimen with low reflectivity, a ghost may appear in the visual field with a low magnification.
- (7) When room temperature (or storing temperature) rises over 50°C, the polarizing performance is degraded and not restored.
- (8) The quarter wave plate compatibility is not guaranteed. Therefore, do not change the combination at shipment.
- (9) The optical axis and parfocality need adjustment after the illuminator is attached to the microscope. If they are not adjusted, the quality will be as follows:

Centration of left and right tubes

... 0.3 max. in the up/down/outward direction and 0.4 inward

Decentration of image by interpupillary distance adjustment

... 0.25mm max. on image surface

Decentration of image when zooming ... 0.7mm max. on image surface

Parfocality between left and right tubes

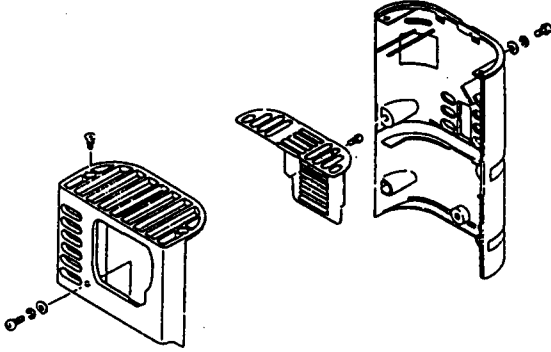
... ± 2 diop at low magnification, ± 3 diop at high magnification

Item		Standard	
1	Illumination performance	1	No extreme uneven illumination SZ40 Zoom magnification 2X or more SZ60 Zoom magnification 1X or more SZ11 Zoom magnification 1.8X or more
		2	No extreme eccentricity in illumination field. SZ40 1mm max. (When illumination field is $\varnothing 20$)

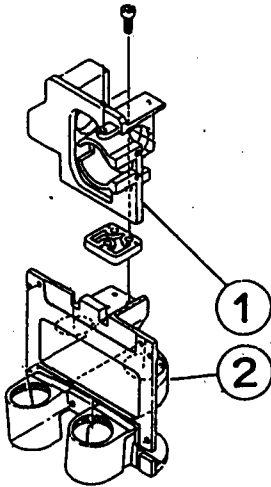
1. OPTICAL ADJUSTMENT

1-1 Adjusting the analyzer

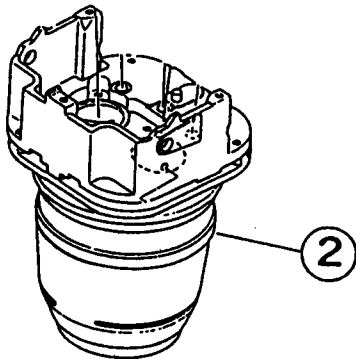
- (1) Remove the three types of covers.

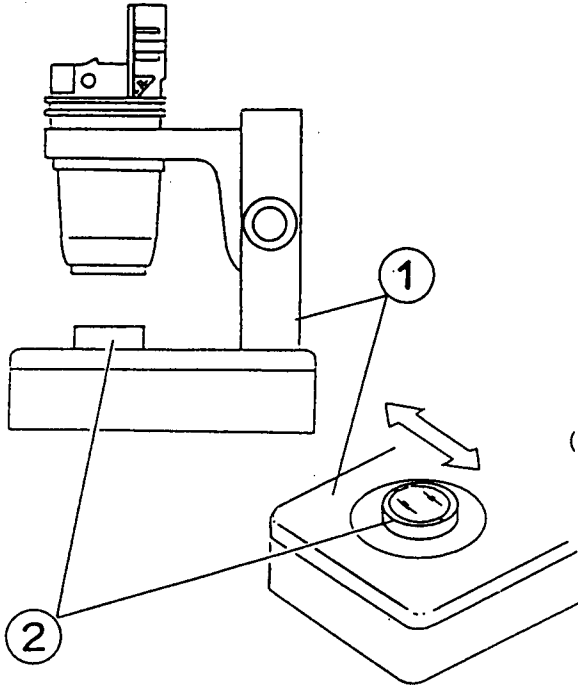


- (2) Disassemble the SZ-CHI into the upper part ① and the lower part ②.



- (3) Disassemble the SZ microscope into the ZB part ② only.
(For the disassembling method and procedure, refer to the SZ3060 repair manual.)



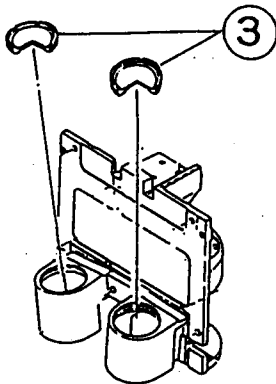


(4) Set the jig

- ① Stand...SZ-ST + SZ-ILA
- ② Polarizing plate...(A-PO, etc.)

* Adjust and fix the SZ microscope direction by visual inspection so that the polarizing plate vibration direction and the SZ microscope are not inclined.

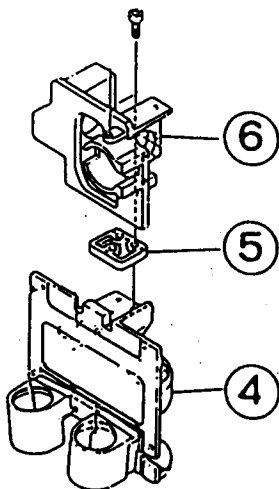
(5) Adjust the polarizing plate vibration to the arrow direction in the drawing on the left.



(6) The analyzer ③ is fixed with Shellac. Apply the mixture on it to make the analyzer rotatable freely.

(7) Rotate the analyzer while monitoring the polarizing plate through the analyzer, and fix it when the polarizing plate is seen most dark.

Adhesive SHELLAC (OT1131)



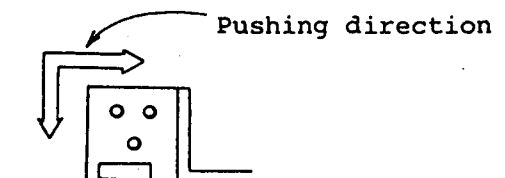
1-2 Adjusting the polarizer

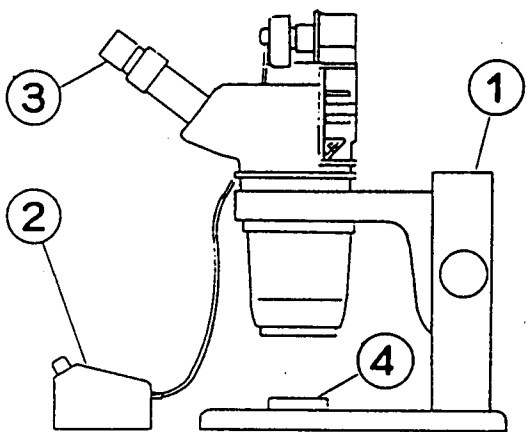
(1) Reassemble the SZ microscope.
(For the disassembling method and procedure, refer to the SZ3060 repair manual.)

* Do not remove the SZ-CHI until the adjustment is finished.

(2) Attach the upper part ⑥ of SZ-CHI to the lower part ④ of it with the insulated plate ⑤ interposed therebetween.

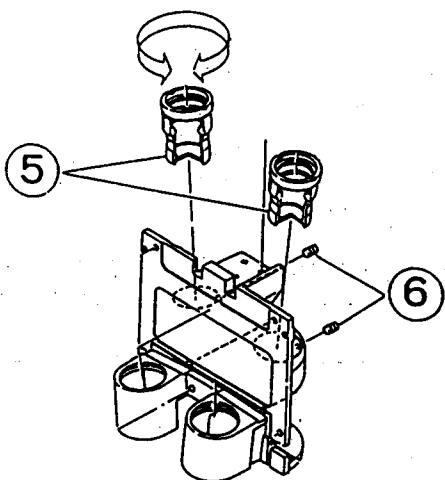
Screw → AB 3X12SA 3 pcs.





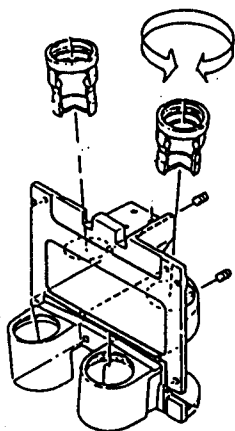
- (3) Set the jig.
 - ① Standard stand .. SZ-ST
 - ② Transformer TL2
 - ③ Eyepiece G series eyepiece
 - ④ Mirror of $\phi 20$ or more

(4) Light the halogen lamp of SZ-CHI.



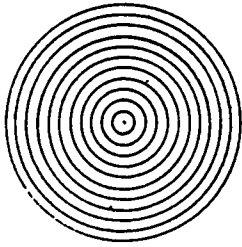
- (5) Loosen the screws ⑥ fixing the left and right polarizer ⑤.
- (6) Adjust focus on the mirror surface.
- (7) Turn the left side polarizer while monitoring through the right side eyepiece, and tighten the screw to fix the polarizer at the position where the view becomes most dark.

(8) Attach the quarter wave plate to the SZ microscope bottom end, turn it gradually while monitoring through the right side eyepiece, and stop it at the position where the view becomes most dark.



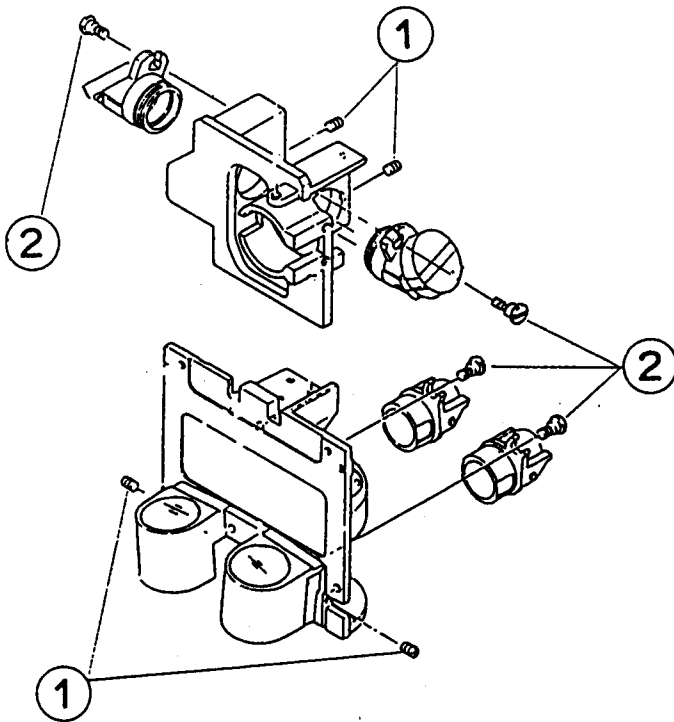
- (9) Turn the right side polarizer while monitoring through the left side eyepiece, and tighten the screw to fix the polarizer at the position where the view becomes most dark.
- (10) Observe the mirror surface by viewing the left and right side eyepieces simultaneously. Turn the quarter wave plate and check if the cross nicol and open nicol appear simultaneously in the left and right visual fields. If any defect occurs, repeat the adjustment from (8).

1-3 Adjusting the illumination field



- (1) Remove the mirror set on the stage.
- (2) Insert the universal standard eyepiece into the SZ microscope sleeve, and place the copy of the chart shown on the left on the stage of the stand as a specimen.

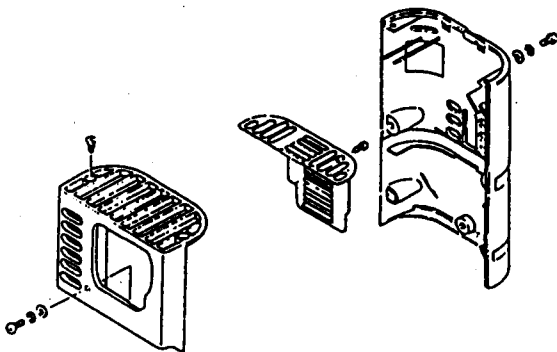
Universal standard eyepiece (KN0048)



- (3) Adjust focus on the specimen (so that the focus is adjusted in all the zoom range to ensure exact WD) and coincide the center of the standard eyepiece with the center of the specimen by moving the specimen.
- (4) Loosen the screws (1) securing the mirrors, and adjust the left and right illumination fields by turning the eccentric pins (2) so that the concentric circle of the illumination field and specimen does not deviate.
- (5) Apply an adhesive to all the fixing screws.

Adhesive SHELLAC (OT1131)

- (6) Mount the covers.



1. Special Tools

Classification	Name	Control No.	Remarks
Jig	Universal standard eyepiece	KN0048	
Others	Mirror	—	ø20 or more
Others	Poralizing plate	—	A-PO, etc.

2. Adhesives

Classification	Name	Control No.	Remarks
Adhesive	Shellac	OT1131	
Adhesive	Silicon KE45 Black	OT1017	