

TRINOCULAR TUBE WITH PHOTO TUBE
SZ-TRU
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 PROCEDURE	
1. Mirror Replacement	C-1
2. Optical Adjustment	C-3
D. SPECIAL TOOLS	
1. Special Tools	D-1
2. Adhesives	D-1

1. Outline of Merchandise

This is the adapter for photography or TV camera optical path to be attached to the observation tube of the binocular stereo microscope SZ40/60/11 series designed for biological and industrial purposes.

2. Features

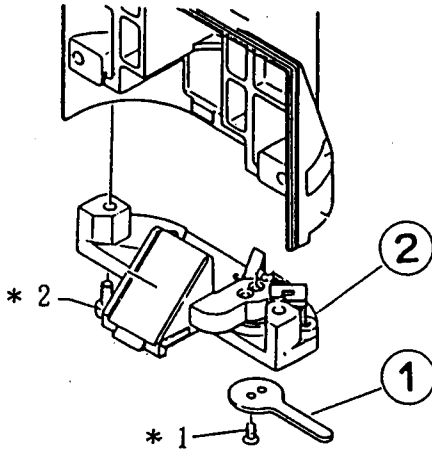
- (1) The right side optical path of the zoom body is taken out and used as an optical path for photography or TV camera.
- (2) Combined with SZ-PT and SZ-CTV and used as a photographing unit and TV adapter.
- (3) Can be attached later to the binocular type zoom body.

3. Using Conditions

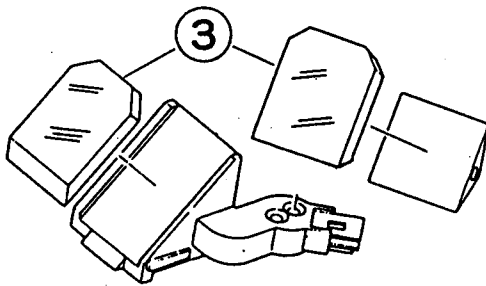
- (1) Operating temperature: 0 ~ 40°C (32~104°F)
- (2) When attached to the observation tube later, the optical axis and parfocality must be adjusted.

Item		Standard		Check method	
1	Mirror switching	1	No shading in the photography light path when the mirror is inserted.	1	Attach SZ-PT, and check at centering telescope (CT).
2	Parfocality	1	Parfocality difference from right side sleeve Lowest magnification $\pm 0.2\text{mm}$ Highest magnification $\pm 1\text{mm}$	1	Attach SZ-PT and check at KN0048.
3	Optical axis	1	Decentration between right side sleeve and straight tube side. 0.35mm max.	1	Attach SZ-PT and check at KN0048.

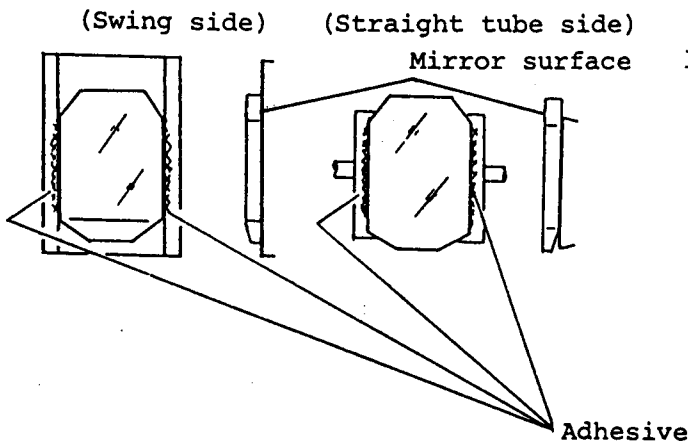
1. MIRROR REPLACEMENT



- 1-1 Remove the lever ①.
SCREW → 2 pcs. (*1)
- 1-2 Remove the BASE ②.
SCREW → 2 pcs. (*2)

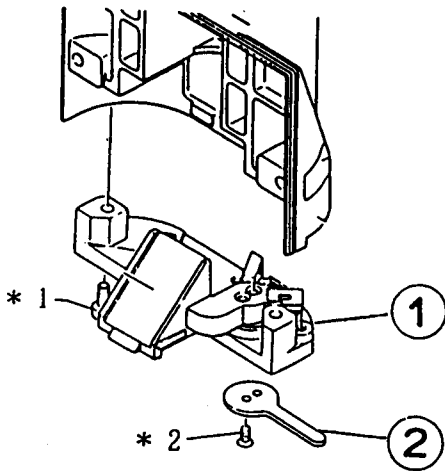


- 1-3 Remove two mirrors ③.
* Bonded with silicon KE45 (black).



- 1-4 Attach the mirror.
* The direction of mirror surface is different in the straight tube side and the swinging side.
* Apply an adhesive to both sides of the mirror.
Adhesive Silicon KE45 (black)

C. REPAIR PROCEDURE



1-5 Mount the BASE ①.

SCREW → AB 3x6SA 2 pcs. (*1)

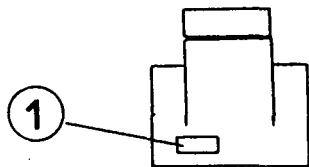
1-6 Attach the lever ②.

SCREW → PSK 2x4SA 2 pcs. (*2)

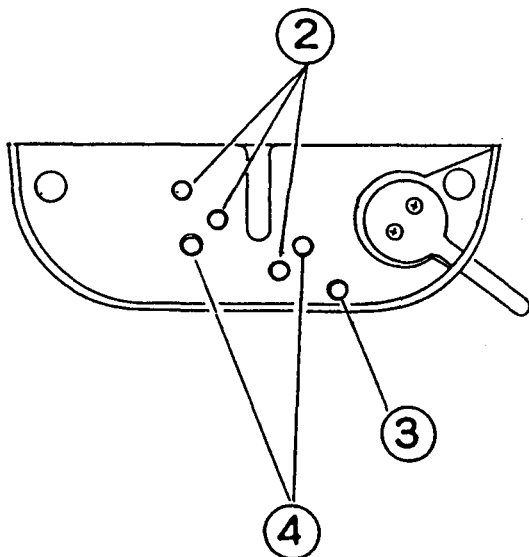
1-7 Make the optical check.
(Refer to 2. Optical Adjustment.)

2. OPTICAL ADJUSTMENT

2-1 Adjust the MIRROR.

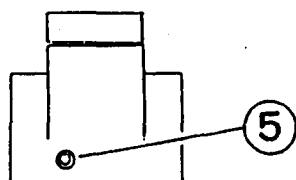


(1) Remove the NAME PLATE (1).



(2) Locations of the adjustment screw and fixing screw

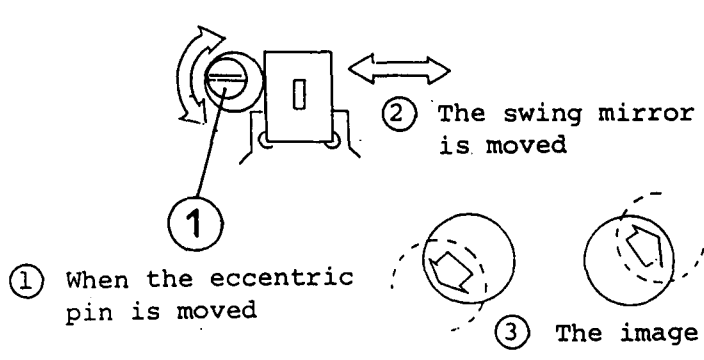
- (2).. Screw fixing the mirror of the straight tube side
- (3).. Adjustment screw to turn the eccentric shaft that determines the swing mirror stop position
- (4).. Adjustment screw to incline the mirror of the straight tube side
- (5).. Screw fixing the eccentric shaft that determines the swing mirror stop position



(3) Adjustment screw functions

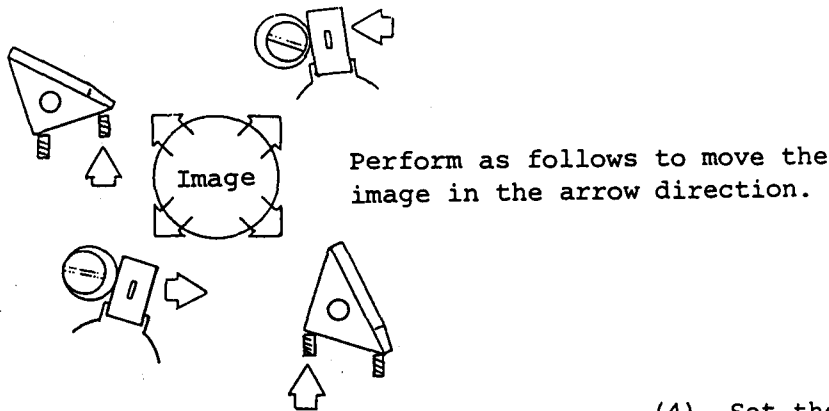
(a) Adjust (incline) the mirror of the straight tube side.

Adjustment (inclination) of the mirror of the straight tube side	Image movement
	<p>Move lower right. (Visual field is shading.) Image</p>
	<p>Move upper left. (Visual field is shading.)</p>

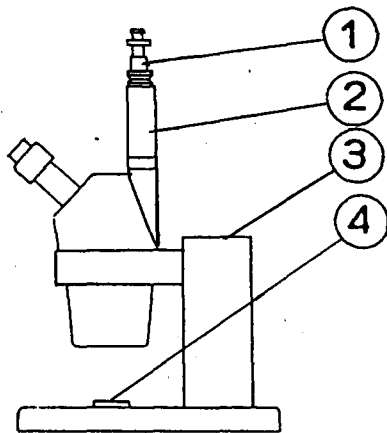


(b) Eccentric pin ① to determine the swing mirror stop position

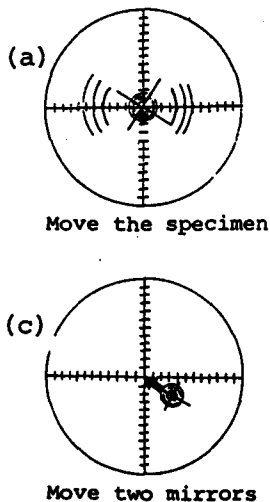
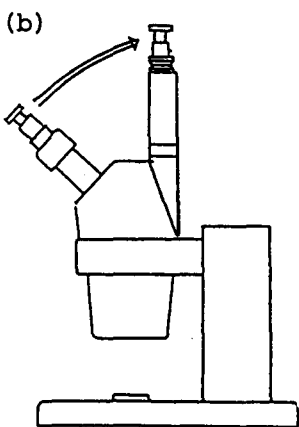
(c) Summary



(4) Set the jigs as shown in the drawing on the left.



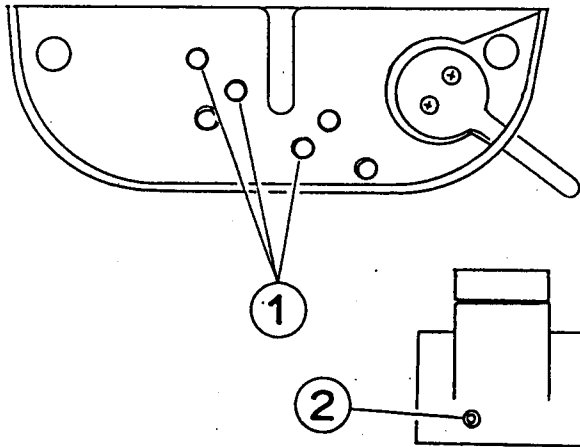
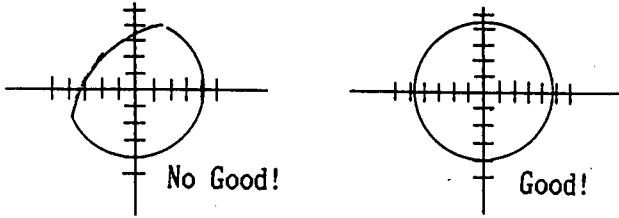
- ①.. Universal standard eyepiece .. KN0048
- ②.. Straight tube SZ-PT
- ③.. Stand SZ-ST
- ④.. Specimen (Concentric circles etc.)



(5) Adjust the mirror position.

- (a) Set KN0048 in the right sleeve, and move the specimen so that the center (or optional point) of the specimen coincides with the center of the cross hairs of KN0048.
- (b) When the centers coincide, shift KN0048 (except for adapter:AD2) to straight tube (SZ-PT).
- (c) Move two mirrors so that the center (or optional point) of the specimen coincides with the center of the cross hairs of KN0048.

* The pupil mentioned here is the iris part that is seen the smallest when the CT INNER TUBE is inserted or pulled out.



- (6) After adjustment, replace KN0048 with KN0029. Check that the pupil is no shading and uniform brightness is obtained.

* When optical axis is adjusted, the pupil should be no shading, but if the pupil is shading, check the mounting condition of TRU.

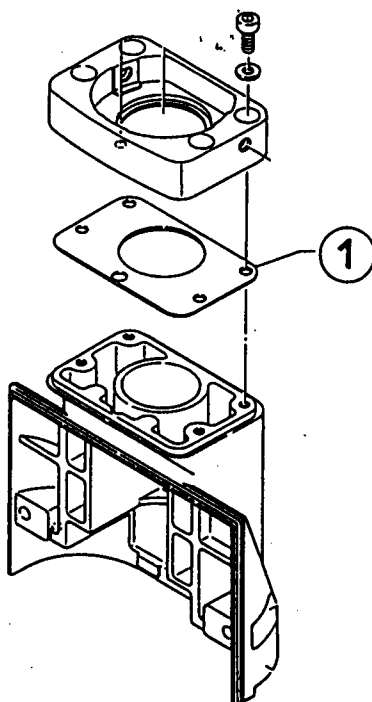
- (7) When the centers of specimen and the cross hairs of KN0048 coincide, tighten the screws ① to fix the mirror of the fixing side and screw ② to fix the eccentric pin that determines the swing mirror stop position.

- (8) Apply an adhesive to each screw.
Adhesive Shellac (OT1131)

2-2 Adjust the parfocality. (Adjust the parfocality difference from the right side sleeve to 0.2mm max. in the lowest magnification side.)

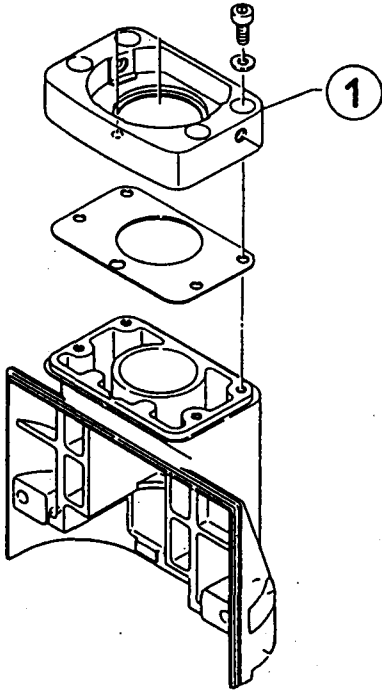
- (1) Set the KN0048 in the right sleeve, and place FT36 (at focal position adjusted to 1m) on KN0048. Adjust the focus at the specimen (easy to adjust the focus) by changing the working distance (WD) while peeping into the KN0048.

* If the right side sleeve has a helicoid ring, set the diopter adjustment ring to "0".



- (2) After adjusting the focus, shift the KN0048 (except for adapter: AD2) to SZ-PT.
- (3) Adjust the focus at the specimen by turning the graduated tube of KN0048. At this time, read the parfocality difference in moving amount of graduated tube (1 division: 0.1mm).
- (4) Increase or decrease the washer ① thickness by the extent of parfocality difference.
- (5) After selecting the washer, repeat (2) ~ (5) so that the parfocality difference between the right side sleeve and the straight tube side (SZ-PT) becomes 0.2mm max.

2-3 Adjust the optical axis



- (1) Set KN0048 in the right side sleeve, and move the specimen so that the center (or optional point) of the specimen coincides with the center of the cross hairs of KN0048.
- (2) When the centers coincide, shift the KN0048 (except for adapter: AD2) to the straight tube (SZ-PT).
- (3) Move the mounting base ① in the screw rattling range, and tighten the screws fixing the mounting base when the centers of the specimen and the cross hairs of KN0048 coincide.

1. Special Tools

Classification	Name	Control No.	Remarks
Tester	Universal standard eyepiece	KN0048	Included adapter: AD2 $\phi 23.2 + \phi 30$ (for stereo microscope)
Jig	CT adapter	KC2048	
Tester	Centering telescope (CT)	KN0029	

2. Adhesives

Classification	Name	Control No.	Remarks
Adhesive	Shellac	OT1131	
Adhesive	Silicon KE45 (black)	OT1017	