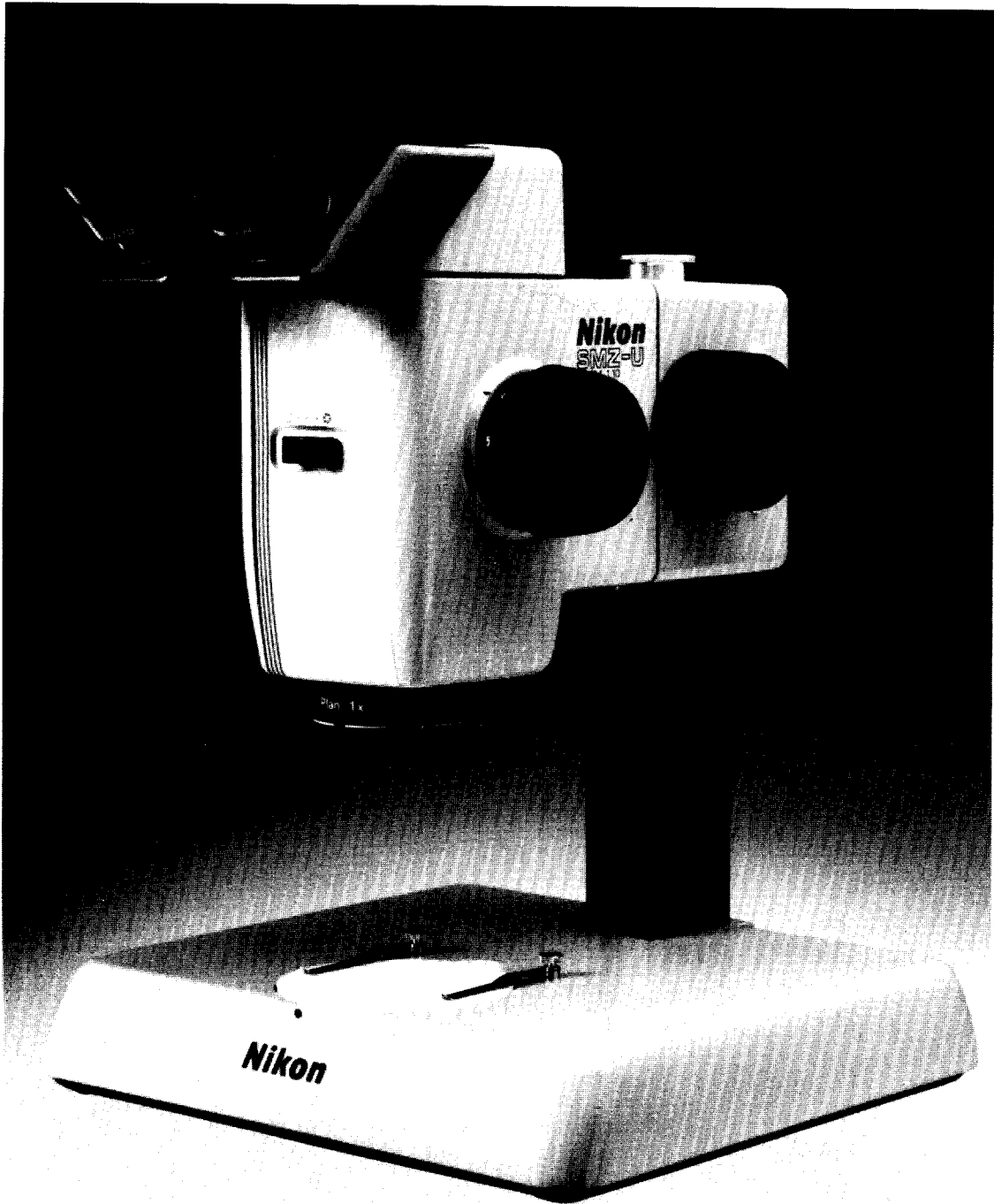


Nikon

STEREOSCOPIC
MICROSCOPE **SMZ-U**

Basic Set / Instructions



NIKON CORPORATION

CAUTIONS

- ① **Avoid Strong Shocks!**
Handle the microscope gently, taking care to **avoid strong shocks.**
- ② **Place of Use**
Avoid the use of the microscope in a dusty place, or where it may be subject to **vibrations**, or exposed to temperatures, moisture, or direct sunlight.
- ③ **Power Source Voltage and Fuse**
Check the power source voltage and fuse referring to p. 5.
- ④ **Changing the Fuse**
Before replacing the fuse, turn OFF the power switch and **disconnect the power source plug.**
- ⑤ **Dirt on the Lens**
Do not leave **dust, dirt, or finger marks** on the lenses. They will prevent you from clearly observing the specimen image.

Thank you very much for purchasing a Nikon microscope.

This instructions describe the main components of Nikon stereoscopic microscope model SMZ-U.

For information regarding accessories, please refer to individual instruction manuals.

CARE AND MAINTENANCE

① Cleaning the Lenses

To clean the lens surfaces, remove dust using a soft brush or gauze. When removing finger marks or grease, use a soft cotton cloth, lens tissue, or gauze lightly moistened with **pure alcohol** (methyl alcohol or ethyl alcohol). Observe sufficient caution in handling alcohol, as it is inflammable.

② Cleaning the Painted Surfaces

Avoid the use of any organic solvent (for example, thinner, ether, alcohol) for cleaning the painted surfaces and plastic parts of the instrument.

③ Never Attempt to Dismantle!

Never attempt to dismantle the instrument since you may impair its functions.

④ When Not in Use

When not in use, cover the instrument with the accessory vinyl cover, and **store it in a place free from moisture and fungus.**

⑤ Periodic Checking

To maintain the best performance of the instrument, we recommend that the instrument be periodically checked. (For details of this check, contact your authorized Nikon distributor.)

★ Please note as per your Nikon warranty, "**Any defects or damage directly or indirectly caused by the use of unauthorized replacement parts and/or performed by unauthorized personnel**" will void the warranty.

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I . Nomenclature and Function

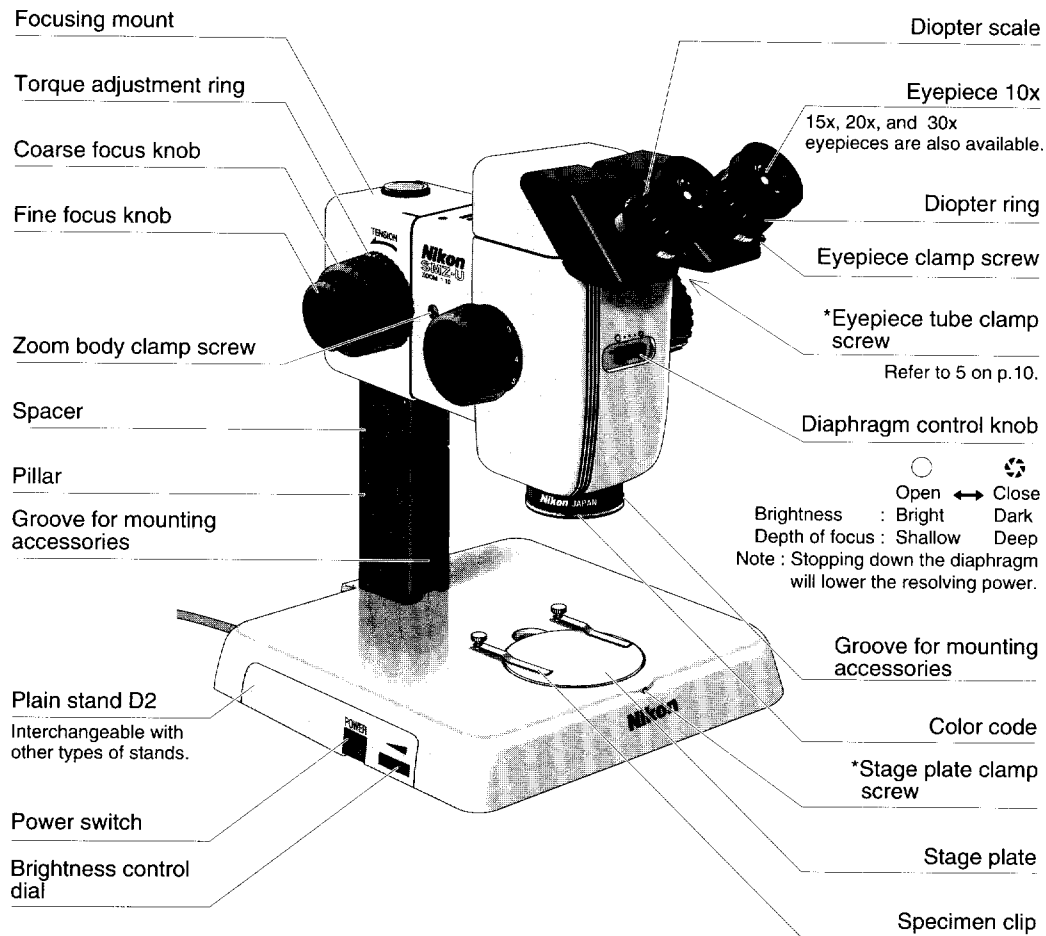


Fig. 1

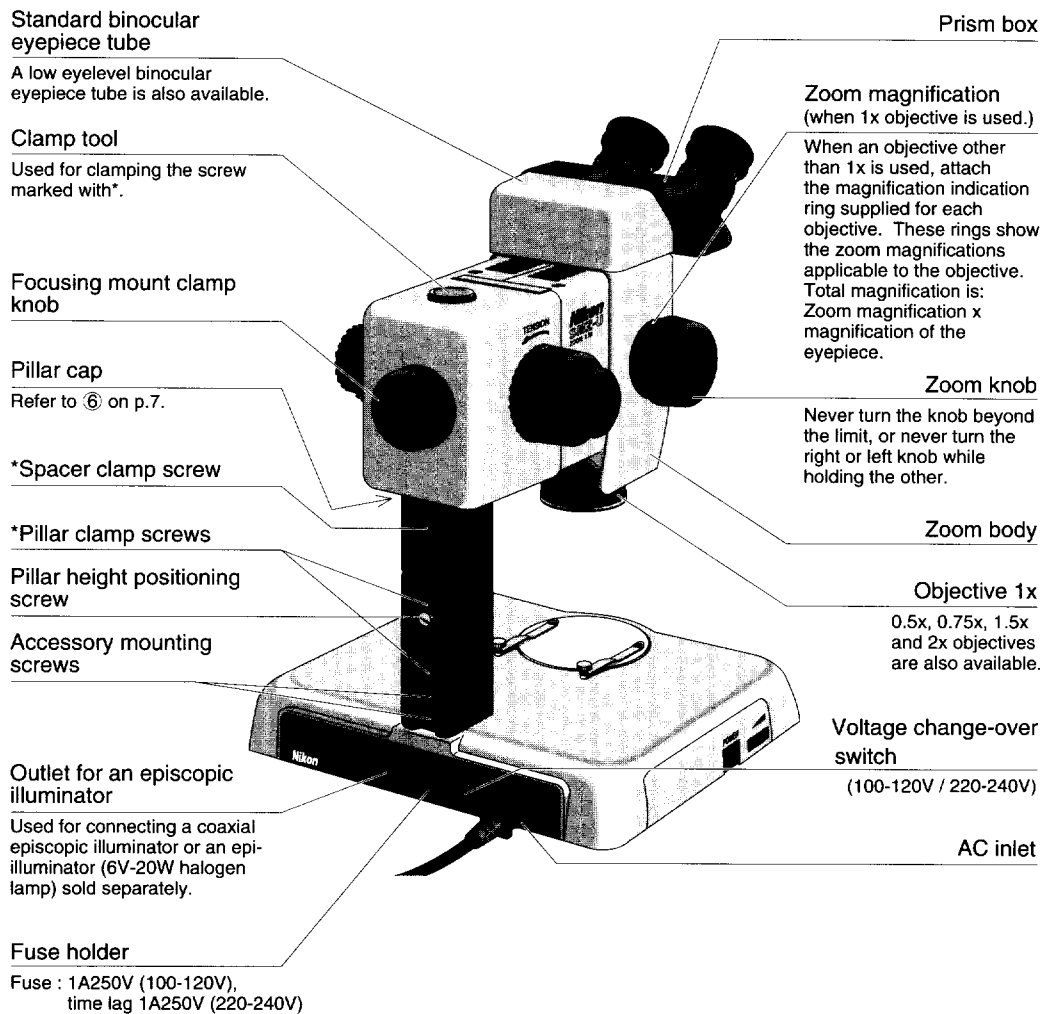
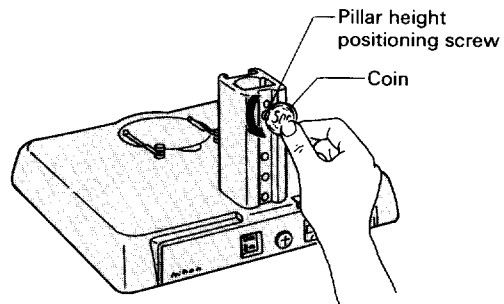


Fig.2

II . Assembly

1.Plain stand D2

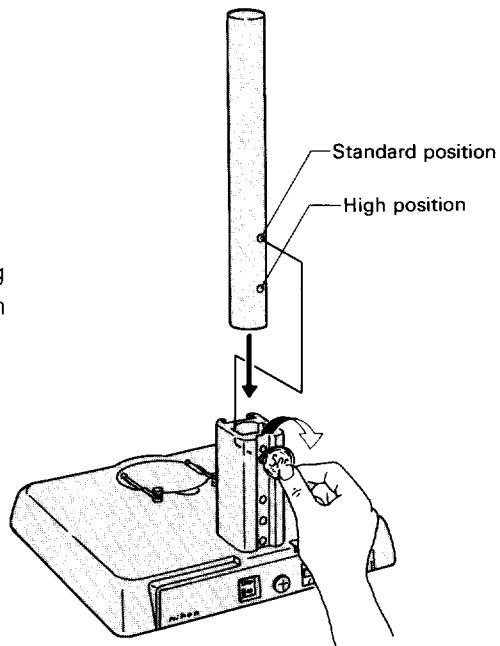
- ① Release the pillar height positioning screw.



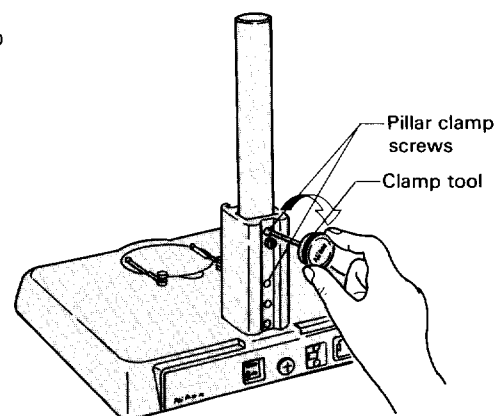
- ② Insert the pillar to its limit and tighten the pillar height positioning screw fitted into the upper hole of the pillar. (Standard position)

- When using 0.75 × objectives or when observing specimens with heights, match the lower hole of the pillar with the height positioning screw and tighten the screw. (High position)

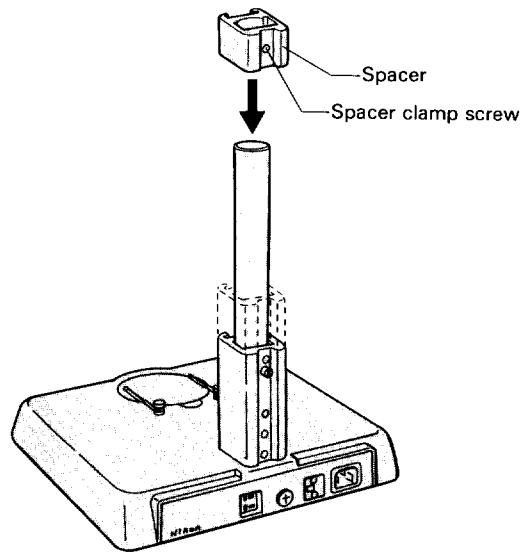
- When using 0.5 × objectives, use the extension pillar (optional) instead of the pillar supplied with the stand. (P.15)



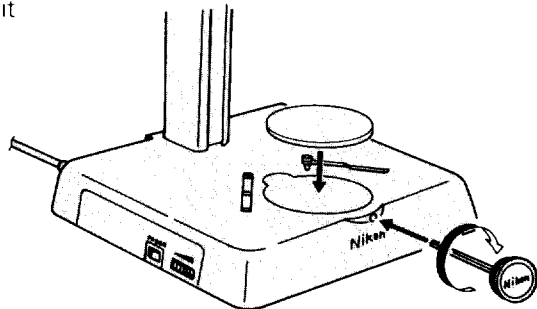
- ③ Fasten the pillar by tightening the two clamp screws with the clamp tool.



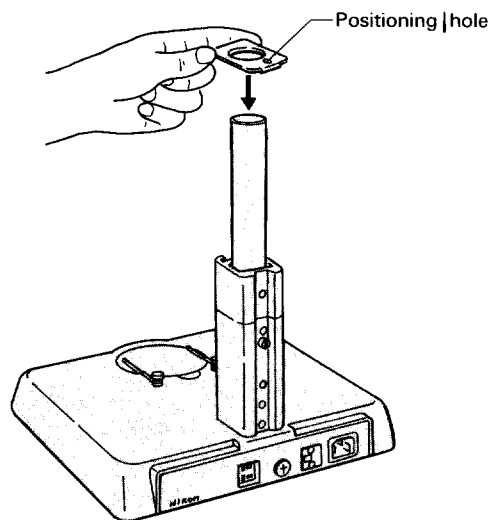
- ④ Slide on the supplied spacer and tighten it by the clamp screw. Do not attach the spacer if you are mounting SMZ-10A on this stand.



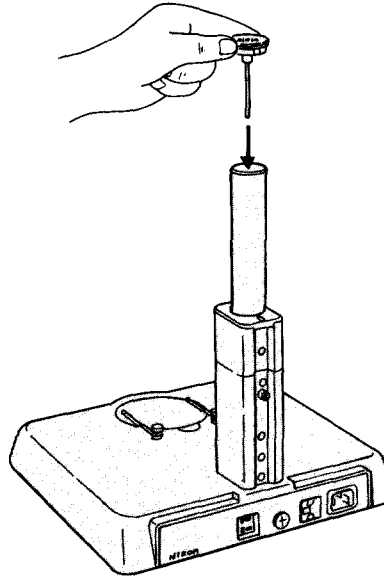
- ⑤ Mount the stage plate and fasten it using the clamp tool.



- ⑥ Mount the pillar cap so that the positioning hole is at the rear.

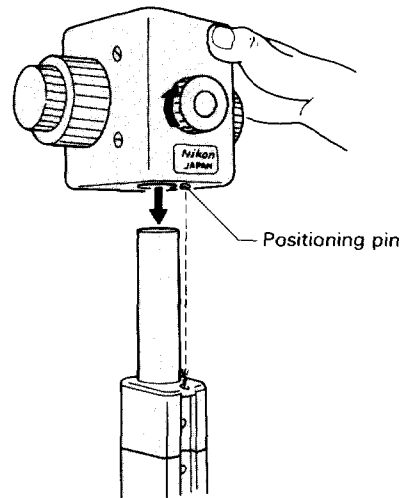


Note: The clamp tool is used for assembling components such as the binocular eyepiece tube. To avoid loss, always store the tool in the top of the pillar.



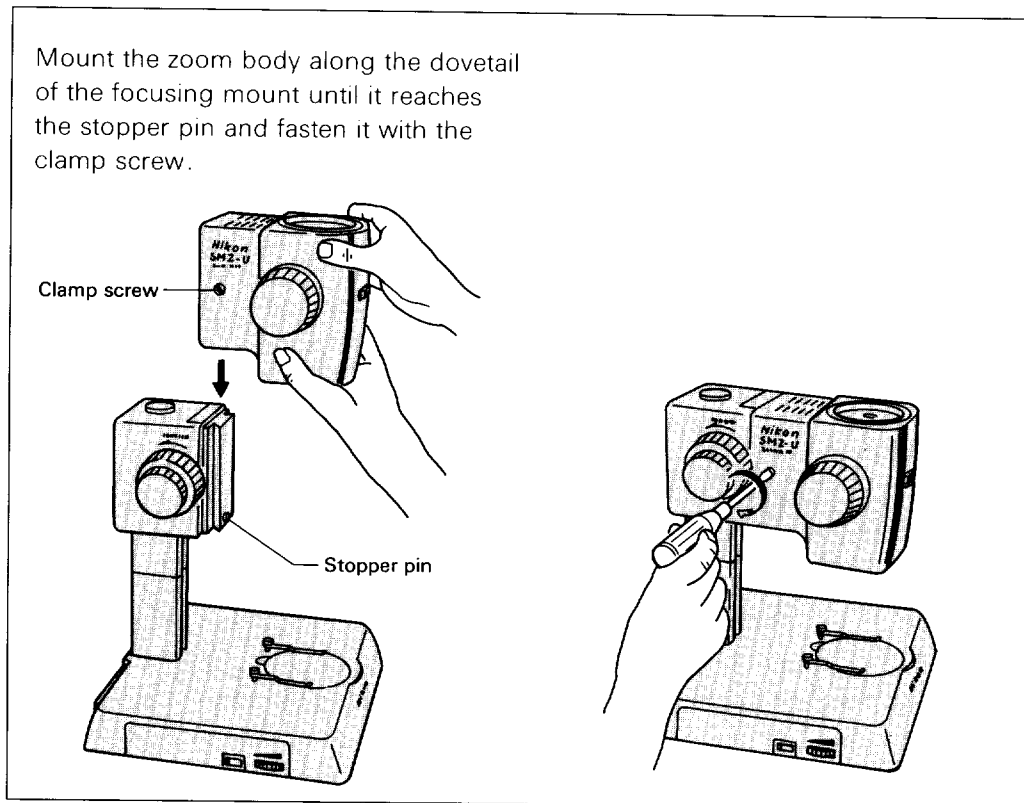
2. Focusing mount

Mount the focusing mount to the pillar so that the positioning pin on the bottom can be inserted into the positioning hole of the pillar cap and fasten it with the clamp knob.



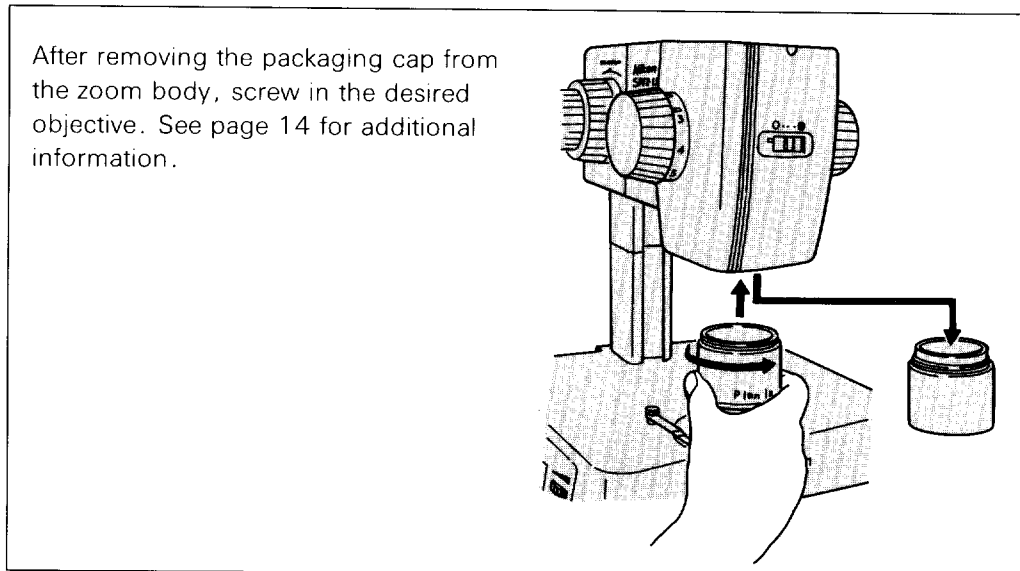
3. Zoom body

Mount the zoom body along the dovetail of the focusing mount until it reaches the stopper pin and fasten it with the clamp screw.



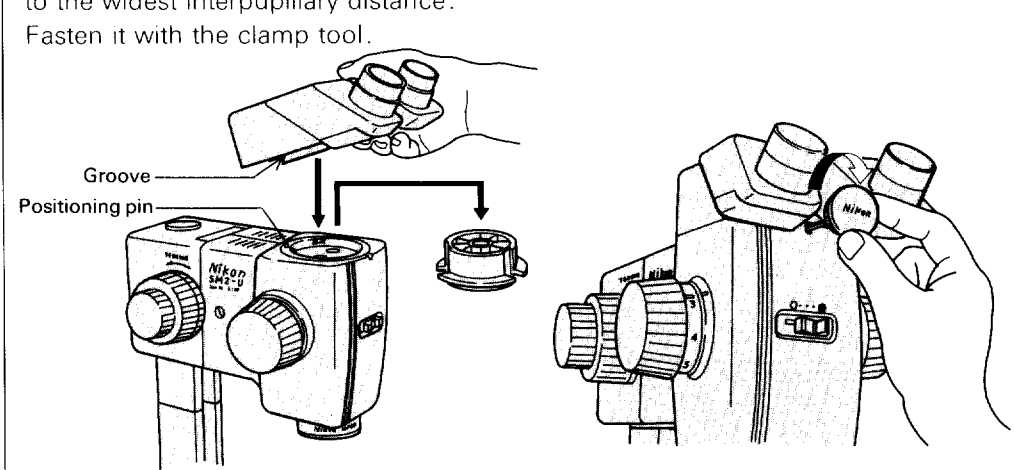
4. Objective

After removing the packaging cap from the zoom body, screw in the desired objective. See page 14 for additional information.



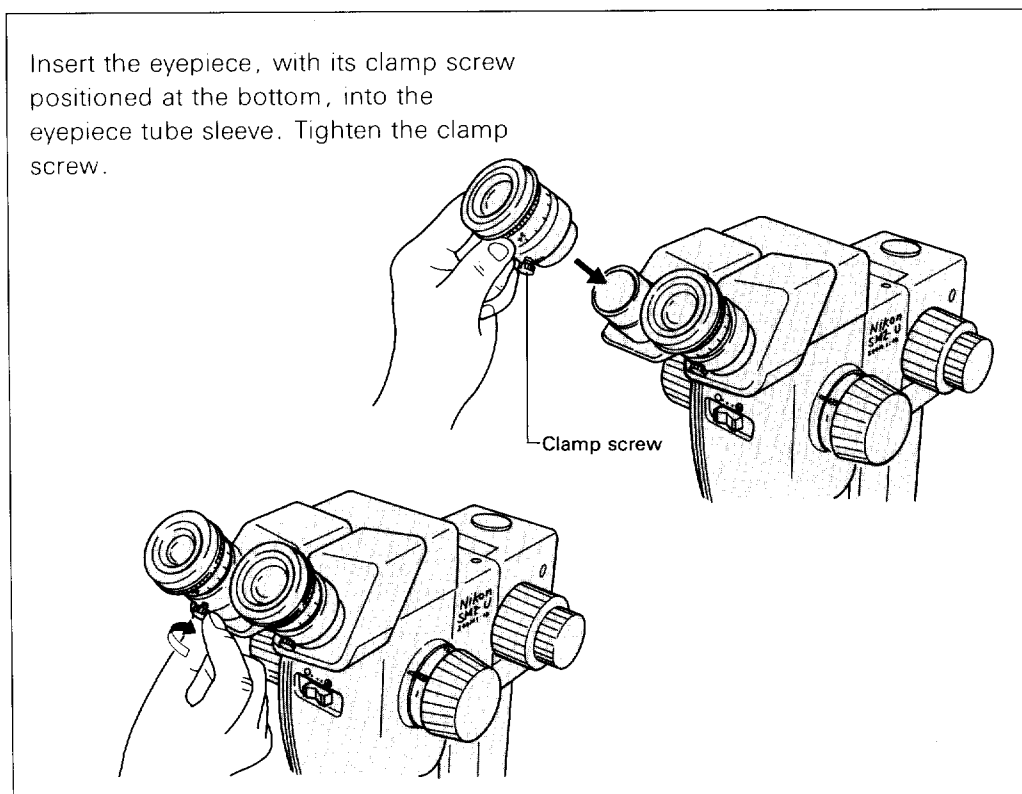
5. Binocular eyepiece tube

Remove the packaging cap from the zoom body. Tilt and mount the binocular eyepiece tube on the zoom body so that its groove aligns with the positioning pin on the zoom body. Open to the widest interpupillary distance. Fasten it with the clamp tool.



6. Eyepiece

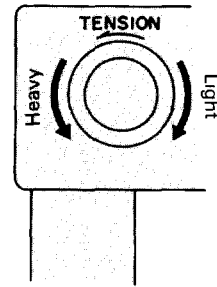
Insert the eyepiece, with its clamp screw positioned at the bottom, into the eyepiece tube sleeve. Tighten the clamp screw.



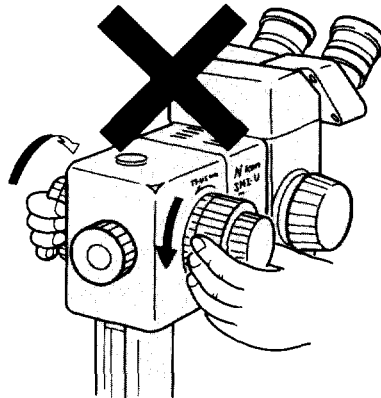
III. Use

1. Focusing mount

Adjust the tension of the focus knobs so that the zoom body does not slip.



Note: Do not twist or rotate the coarse or fine focus knobs that are located on the left and right sides beyond their limit. Do not rotate the fine or coarse focus knob when holding the other. This will cause damage.

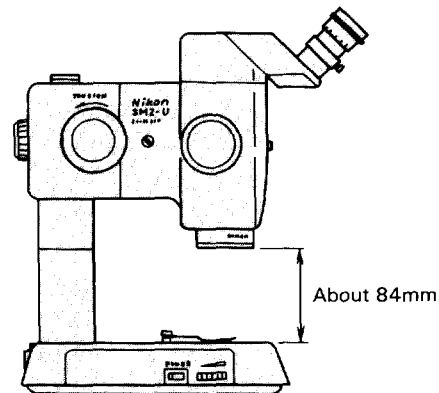


2. Diopter Adjustment..... (A change of magnification should not cause the defocus.)

Instructions using 1 × objective is shown below :

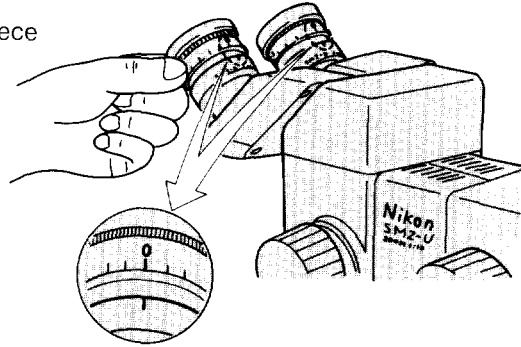
- ① Adjust the distance between the specimen and the objective to about 84 mm by turning the coarse focus knob. (See note.)

Note: This distance is called the "working distance". See Table 2 (p. 18) for the working distance of each objective.

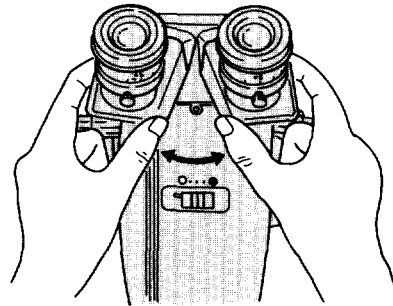


III. Use

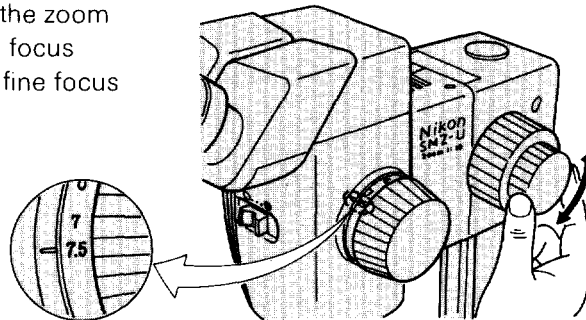
- ② Set the diopter scale of each eyepiece to "0".



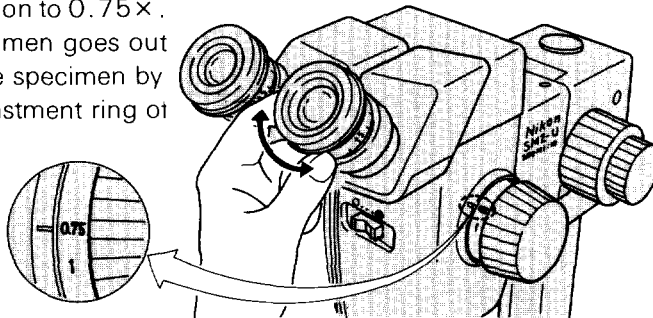
- ③ Move the prism box to adjust the interpupillary distance.

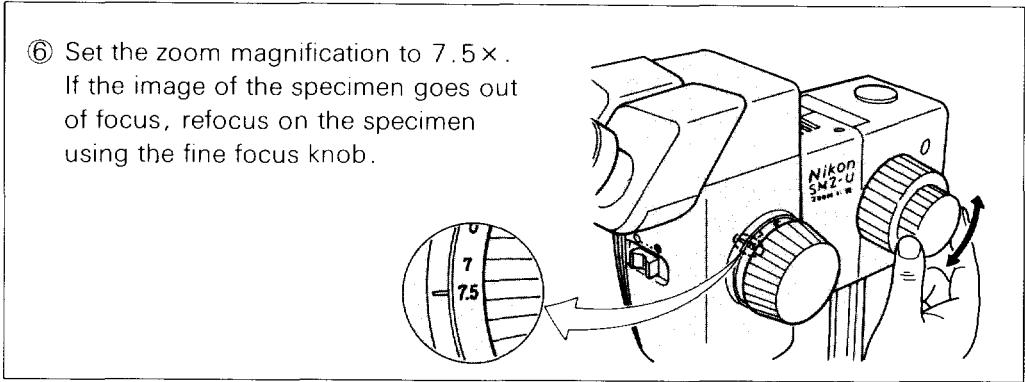


- ④ Turn the zoom knob to set the zoom magnification to $7.5\times$ and focus on the specimen using the fine focus knob.



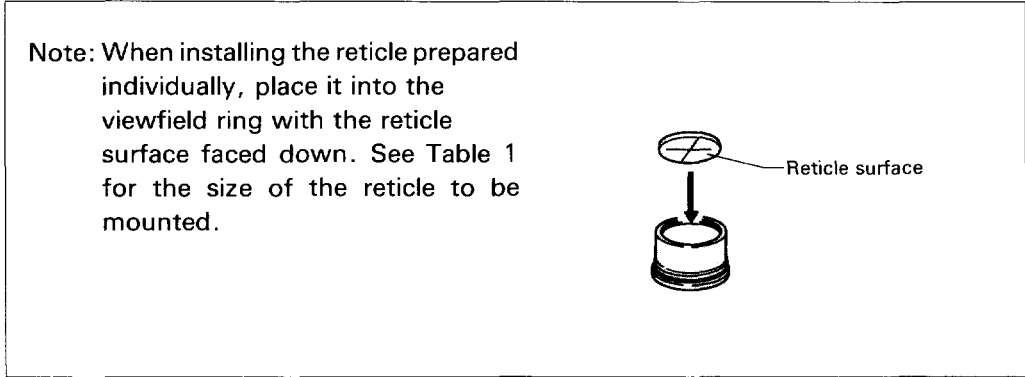
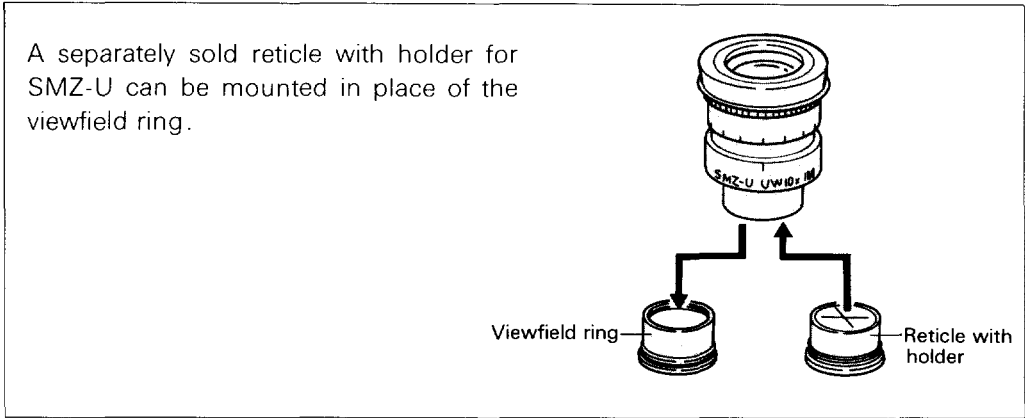
- ⑤ Set the zoom magnification to $0.75\times$. If the image of the specimen goes out of focus, refocus on the specimen by rotating the diopter adjustment ring of each eyepiece.





⑦ Repeat the procedures in ⑤ and ⑥ until the focusing with $0.75\times$ and $7.5\times$ will coincide.

3. Eyepiece

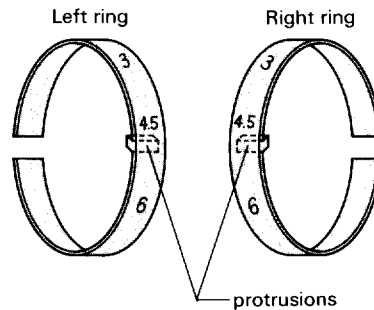


4. Objective

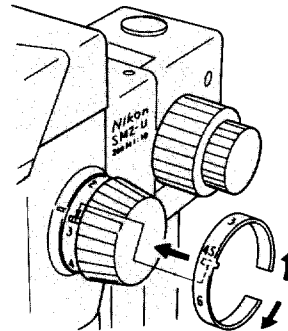
● Attaching the magnification indication ring

All objectives, except 1×, have their own pair of magnification indication rings.

- ① Each magnification ring is attached to the right and left zoom knobs. Confirm the right or left ring referring to the figure before attaching.



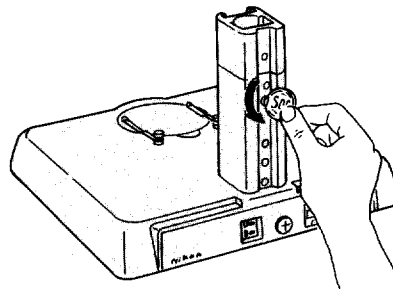
- ② Spread the magnification indication ring as shown in the figure. Put the indication ring on the zoom knob so that the protrusion fits into the groove on the zoom knob.



● 0.75× Objective

When the specimen requires greater working space, the pillar should be extended.

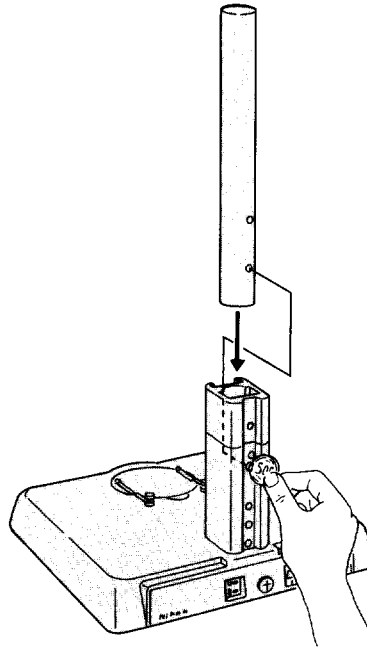
- ① Loosen the height positioning screw.



- ② Fit the height positioning screw in the lower hole of the pillar and tighten the screw, then clamp the two clamp screws.

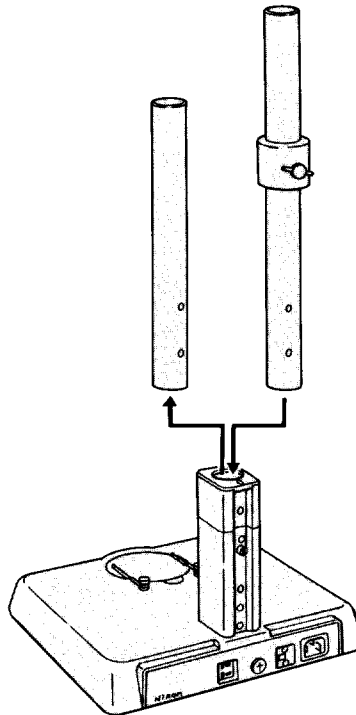
The pillar can be extended further by screwing in the height positioning screw before inserting the pillar.

Note: Be careful that the focusing mount does not slip when it is fastened in the middle of the pillar.



● 0.5× Objective

Replace the standard pillar with the extension pillar sold separately.



Note: Bring the stopper ring of the extension pillar in close contact with the bottom surface of the focusing mount.

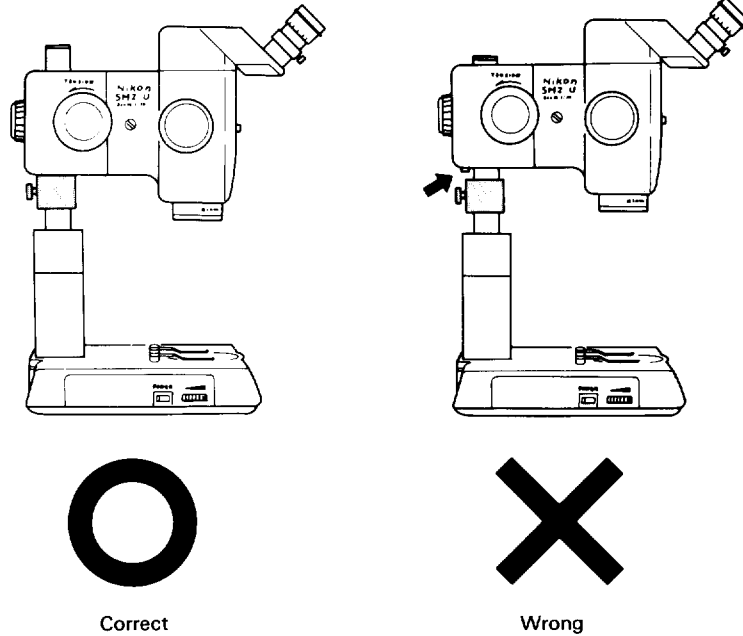


Table 1 : Pillar Position and Observable Height of Specimen

Unit: mm

Microscope	Pillar position	Objective				
		ED Plan 0.5 ×	ED Plan 0.75 ×	ED Plan 1 ×	ED Plan 1.5 ×	ED Plan 2 ×
SMZ-U	Standard position	—	3	39	48	48.5
	High position	2.5	46	82	91	91.5
	Extension pillar	82.5	126	162	171	171.5
SMZ-10A	Standard position	23.5	67	103	112	112.5
	High position	66.5	110	146	155	155.5
	Extension pillar	146.5	190	226	235	235.5

Note 1: Maximum observable height of the specimen when the focusing mount is fixed at the highest point on the pillar.

Note 2: The instrument becomes top-heavy when focusing mount is fixed at the high point on the pillar. Be very careful when mounting photomicrographic attachment or TV camera on the stereoscopic microscopes.

5. Stage Adapter

Stage for the Optiphot-2 can be attached using the optional 4" Stage Adapter.

Set the pillar at the highest position.

(Refer to ② on p. 15.)

(Exchange the pillar to the extension pillar when using 0.5× or 0.75× objective.)

- ※ ● Rectangular mechanical stage "R3"
 - Circular graduated stage "G"
 - Large mechanical stage "4R"
- can be mounted on this stage adapter.

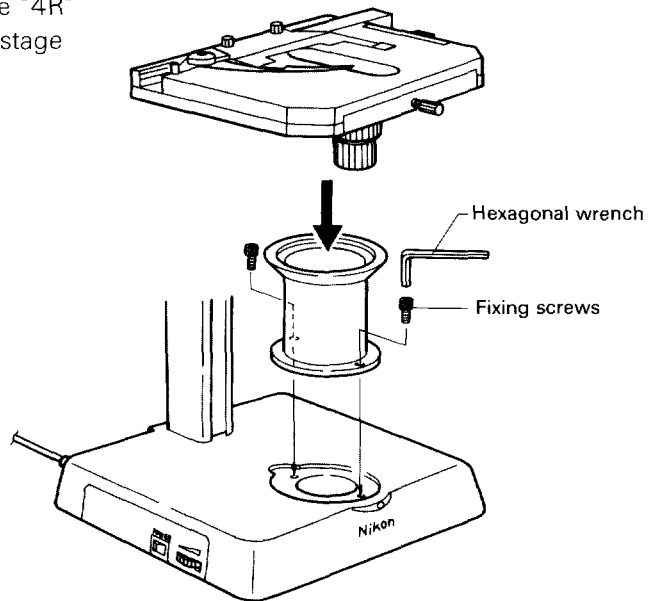


Table 2. Objective/Eyepiece Magnification Chart

ED plan objective Working distance (Color code ※1)		0.5 ×	0.75 ×	1 ×	1.5 ×	2 ×
		155 (Red)	117 (Yellow)	84 (White)	50.5 (Green)	40 (Blue)
Eyepiece Field number (Reticle ※2)	Total mgf.	3.75 × } 37.5 ×	5.63 × } 56.25 ×	7.5 × } 75 ×	11.25 × } 112.5 ×	15 × } 150 ×
	Real field	64 } 6.4	42.67 } 4.27	32 } 3.2	21.33 } 2.13	16.0 } 1.6
UW15 × 17 (φ25)	Total mgf.	5.63 × } 56.25 ×	8.44 × } 84.38 ×	11.25 × } 112.5 ×	16.88 × } 168.8 ×	22.5 × } 225.0 ×
	Real field	45.33 } 4.53	30.22 } 3.02	22.67 } 2.27	15.11 } 1.51	11.33 } 1.13
UW20 × 15 (φ21)	Total mgf.	7.5 × } 75 ×	11.25 × } 112.5 ×	15 × } 150 ×	22.5 × } 225 ×	30 × } 300 ×
	Real field	40.0 } 4.0	26.67 } 2.67	20.0 } 2.0	13.33 } 1.33	10.0 } 1.0
UW30 × 7 (※3)	Total mgf.	11.25 } 112.5 ×	16.88 × } 168.8 ×	22.5 × } 225 ×	33.75 × } 337.5 ×	45 × } 450 ×
	Real field	18.67 } 1.87	12.44 } 1.24	9.33 } 0.93	6.22 } 0.62	4.67 } 0.47

Unit: mm

- ※1: The color code and the color of the number on the magnification indication ring are the same.
- ※2: Use the reticle of 1.5mm or thinner in thickness.
- ※3: Consult your dealer how to attach the reticle to 30 × eyepiece.

Table 3. Depth of Focus Chart (Diaphragm size: Min. ~ Max.)

Observation; Eyepiece UW10×

ED plan objective Zoom magnification	0.5×	0.75×	1×	1.5×	2×
0.75×	5.46	2.43	1.36	0.61	0.34
	∫ 69.6	∫ 30.9	∫ 17.4	∫ 7.7	∫ 4.4
4×	0.39	0.15	0.09	0.03	0.02
	∫ 5.0	∫ 2.2	∫ 1.2	∫ 0.6	∫ 0.3
7.5×	0.22	0.1	0.06	0.02	0.01
	∫ 3.8	∫ 1.7	∫ 1.0	∫ 0.4	∫ 0.2

Unit : mm

Photomicrography

ED plan objective Zoom magnification	0.5×	0.75×	1×	1.5×	2×
0.75×	2.12	0.94	0.53	0.24	0.13
	∫ 52.9	∫ 23.5	∫ 13.2	∫ 5.9	∫ 3.3
4×	0.16	0.07	0.04	0.02	0.01
	∫ 4.1	∫ 1.8	∫ 1.0	∫ 0.5	∫ 0.3
7.5×	0.14	0.06	0.03	0.02	0.01
	∫ 3.4	∫ 1.5	∫ 0.85	∫ 0.4	∫ 0.2

Unit : mm

Nikon reserves the right to make such alterations in design as may be considered necessary in the light of experience. For this reason, particulars and illustrations in this handbook may not conform in every detail to models in current production.

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