Nikon

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TOKYO, JAPAN

Printed in Japan (69. 6. BO) B-6

Nikon

Photomic FTN

FINDER

INSTRUCTIONS

CONTENTS

FEATURES

The Photomic FTN Finder is an eye-level finder incorporating a CdS element exposure meter of "Through-The-Lens" system with the following outstanding merits:

1) It permits with almost all NIKKOR lenses full-open measurement, viewing and focusing on the brightest finder image.

2) It enables exposure measurement with lenses without meter coupler using the stop-down method.

3) Unlike the meter of integrated or spot reading type, it adopts a centerweighted measuring system, so that the correct exposure in general photography is set without complicated adjustment or compensation.

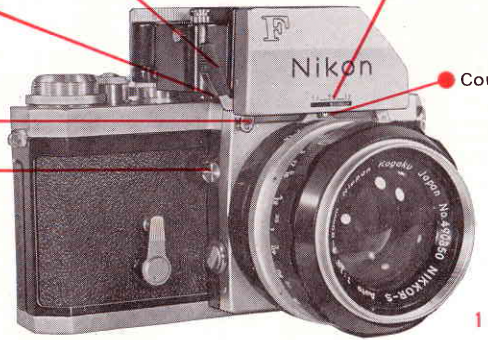
4) Correct exposure setting is done only by centering the pointer needle appearing either in the meter window inside the finder or outside on the finder top.

5) The meter is simply and rapidly adjusted to the max. aperture of each lens, when the lens is fitted to the camera.

6) The shutter speed in use also comes in sight on the side of the meter window inside the finder.

7) It enables correct exposure measurement in reprocopy, close-ups, photomicrography, etc., as well as general photography.

FRONT VIEW



Finder lock lever

Battery chamber lid

Securing pin

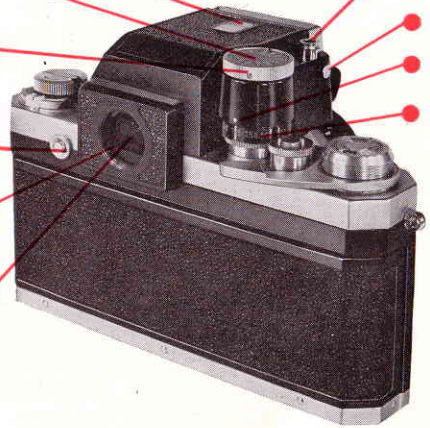
Depth of field preview button

Max. aperture scale (for checking)

Coupling pin

1

REAR VIEW



Meter window

Film speed (ASA) dial

(ASA scale index ring) Shutter speed selector

Finder-lock release button

Screw for attachment

Finder eyepiece

Switch-off and battery check button

Switch-on button

Shutter speed index

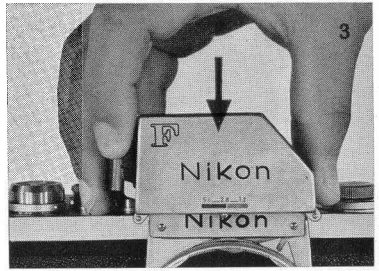
Shutter speed scale

2

SPECIFICATIONS

- **Type** ..... Full-open, "Through-The-Lens" system
- **Brightness measuring range** ..... 0.5–16000 cd/m²
  EV2 - EV17 when using ASA 100 film and NIKKOR 50mm f/1.4
  (e.g. from the exposure of ½ sec. at f/1.4 to that of 1/1000 sec. at f/11)
- **Aperture coupling range** f/1.2–f/32
- **Shutter speed scale** ..... T, B–1/1000
- **Film speed (ASA) dial** 6–6400
- **Max. aperture scale** ..... 1.2—2.8—5.6 (for checking)
- **Mercury batteries** ..... 2.6V (1.3V×2)
  Provided with battery check button
- **Weight** ..... 9.5 ozs. (270 g)

ATTACHING THE FINDER



◆ 1) **When the lens has been attached to the camera,** set the lens aperture ring to any position between f/5.6 and max. aperture.

2) Make sure that the coupling pin at the finder bottom is centered. If not, bring it to the center with the finger.

3) Pushing the finder lock lever to spread the right and left securing pins at the bottom, place the finder on the camera with its exposed prism bottom set deep into the camera screen chamber and the camera nameplate covered completely by the finder chrome-plated front part.

4) In this position, gently press down the finder until it settles in position with a click. Then, release the fingers from the finder lock lever to have the right and left securing pins attach the finder firmly to the camera.

5) Turn the shutter speed scale on the finder top right or left so that it rotates together with the shutter speed scale underneath on the camera.

6) Revolve the lens aperture ring slowly and securely in the direction the diaphragm is stopped down further than f/5.6. The meter coupling prong on the lens will couple with the centered pin at the finder bottom. (Fig. 4)

7) Then, revolve the lens aperture ring in the opposite direction until it comes to its max. aperture. (Fig. 5)
(The position of the red marking moving along the max. aperture scale on the finder front surface will indicate that in the finder the max. aperture of the lens being used has been set correctly.)

◆ **To fit the finder to the camera before the lens is attached to the camera, do 2), 3) and 4) of the above procedures.**

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REMOVING THE FINDER

◆ When the finder is interchanged with Action Finder or Waist-level Finder, or when the synchro selector ring on the camera is set in flash synchronization, remove the finder from the camera by pushing the finder-lock release button on the camera back, and depressing the lock lever on the finder to lift up the finder. (Fig. 6)

● Make sure that the switch-off button of the removed finder is depressed, avoiding high temperature and damp.


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CHANGING LENSES

Detaching the lens

◆ Depressing the lens-lock release button turn the lens barrel clockwise until the black dot on the aperture indicator of the lens lines up with the black dot on the camera body and detach the lens first from the opposite side of the coupling prong.

Attaching the lens

◆ To attach the lens to the camera before the finder is fitted to the camera, lining up the above mentioned two black dots, depress and turn the lens barrel counter-clockwise until it clicks.

TWO EXPOSURE MEASURING METHODS

◆ **Exposure determination is performed by either of the following two methods:**

1. **Full-open measurement** (Refer to p.10—13)
   This usually employed method is applied when a NIKKOR Auto lens with meter coupling prong is used.
2. **Stop-down measurement** (Refer to p.14)
   This method is employed when a NIKKOR lens without meter coupling prong is used, or the coupling is interfered with such as a close-up extension ring or bellows inserted between lens and camera.

◆ **Sequence for determining the correct exposure**

In either of the above methods the correct exposure is obtained in the order as below:

1. Set the film speed (ASA) being used.
2. Depress the switch-on button on the finder.
3. Looking into the finder, bring the object image into focus and compose the picture.
4. Turn the shutter speed scale on the finder and/or the aperture ring on the lens until the meter pointer needle comes to the center. The shutter speed can be seen at the right side of the pointer needle window at the top.

CHANGING LENSES

Detaching the lens

◆ Depressing the lens-lock release button turn the lens barrel clockwise until the black dot on the aperture indicator of the lens lines up with the black dot on the camera body and detach the lens first from the opposite side of the coupling prong.

Attaching the lens

◆ To attach the lens to the camera before the finder is fitted to the camera, lining up the above mentioned two black dots, depress and turn the lens barrel counter-clockwise until it clicks.

◆ To attach the lens to the camera with the finder mounted, proceed to 6) and 7) on p. 6, after attaching the lens to the camera.

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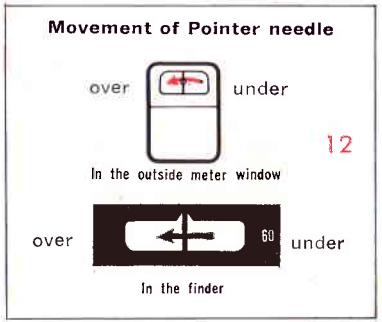
In either of the above methods the correct exposure is obtained in the order as below:

1. Set the film speed (ASA) being used.
2. Depress the switch-on button on the finder.
3. Looking into the finder, bring the object image into focus and compose the picture.
4. Turn the shutter speed scale on the finder and/or the aperture ring on the lens until the meter pointer needle comes to the center. The shutter speed can be seen at the right side of the pointer needle window at the top.

4. Centering the pointer needle

With a main object image brought to the center of the viewfield, rotate the shutter speed scale and/or the aperture ring of the lens, until the pointer needle in the meter either inside the finder or outside on the camera top comes to the center.

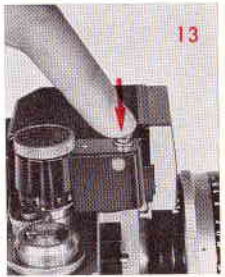
- The needle moves in the same direction as the shutter speed scale or the aperture ring rotates. (Fig. 11, 12)



- The shutter speed scale clicks at each marked setting. The shutter does not give an intermediate exposure time. Therefore, if the needle does not stay exactly at the center at the moment the shutter speed scale clicks, correct the deviation of the needle by slightly adjusting the aperture ring of the lens.
- If the needle comes to the center at B setting on the shutter speed scale, the correct exposure time will be 2 seconds.
  Depress the shutter button for 2 seconds at the B position. In this exposure, use a tripod to avoid camera movement.
- When the shutter release button is pressed with the shutter speed scale set to T, the shutter remains open until the scale is turned in the B direction.
  In exposure measurement, if the pointer needle is centered with the shutter speed scale set to T, this indicates that an exposure time of 4 seconds will be correct.

5. Depressing the "switch-off" button

After the exposure has been made, depress the"off"button on top so that the "on" button on the side pops up, to avoid unnecessary drain of the mercury batteries. (Fig. 13)

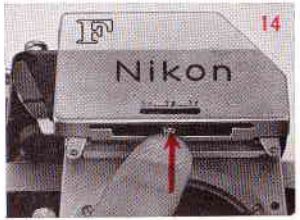


STOP-DOWN MEASUREMENT

Some interchangeable NIKKOR lenses of extremely long focal length and other special purpose lenses have no coupling prong on their aperture rings. Or even though provided with the coupling prong, when any attachment is inserted between the lens and the camera, such as the extension ring, bellows or for another reason, the lens cannot be coupled to the Photomic FTN Finder.

In such cases the stop-down measurement should be made as follows:

1. Set the film speed (ASA) dial to the film speed being used.
2. Before attaching the lens to the camera, make sure that the coupling pin at the finder bottom is centered. If not, bring the pin to the center with the finger. (Fig. 14)
3. Push up the pin, so that the red index visible in the finder front surface springs back to the position 5.6 (red colored).
4. In this state attach the lens to the camera.
5. Depress the switch-on button.
6. Looking into the finder, focus and compose the picture.
7. Center the pointer needle by adjusting the shutter speed and/or the aperture of the lens. (In this case, the finder viewfield will be darker by the aperture diaphragm stopped down.)
   When using the NIKKOR Auto lenses not provided with the coupling prong stop down the diaphragm by means of the depth of field preview button.



IMPORTANT !

1. Coupling range of meter

An opposite movement of the needle to that shown on p. 12 may be possible even within the coupling range when the combination of aperture and shutter speed selected is too far away from the correct exposure. In this case, reset the shutter speed to 1/125 sec. and repeat the measurement, then the correct centering of the needle will be obtained. It may happen that for an extremely bright or dark scene, the meter needle stops or makes discontinuous movement and cannot be set to the center. This does not indicate any disorder but is caused by the brightness of the scene being out of coupling range of the meter.

2. Using filter or close-up attachment

It is one of the great advantages of the Photomic FTN Finder that exposure factors need not be considered in using filters or close-up attachment lenses attached to the lens, because the exposure decreases giving the same effect to the meter and to the film. The correct exposure is always obtained by the meter setting without any alteration.

For the same reason, compensation of f-number, which is required when the lens-to-camera distance is extended for close-ups such as in using an extension ring or bellows, can be disregarded. In all cases, however, it is essential to observe the picture taking sequence: set the exposure after focusing. It is also important that no picture should be taken with the filter removed after the exposure is set with the same filter attached.

3. Effect of low temperature

If the meter is kept "on" and exposed to bright light at a low temperature (below 32°F or 0°C) for a long time, the meter may show a great error or even stop its function. This abnormal condition will naturally be rectified when the temperature rises again. Therefore, in the cold weather, take caution not to leave the meter on for longer than 3 minutes at a time.

4. Light entering the finder eyepiece

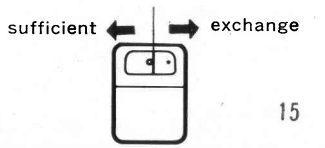
As the finder is carefully designed to minimize the effect of light coming in from the finder eyepiece, there is no need to worry about such an effect under general picture taking conditions. Under the following conditions, however, the use of the eye-cup on the eyepieces is recommended so as to avoid the entrance of strong light into the eyepiece as much as possible.

- When exposure measurement by the stop-down method is made with the lens stopped down to quite a small aperture
- When a dark object or scene is measured with the camera located in a bright place, e.g. an object or scene in the shade taken with the camera placed in the sun
- When bright light directly comes from one side to the eye viewing into the eyepiece, it will be better to look into the finder with the other eye
- When exposure determination is made by viewing the pointer needle in the outside meter window on the finder top, cover the finder eyepiece with your hand

MERCURY BATTERY

◆ **Checking the batteries**

Push in the "switch-off" button on the finder top which works also as a check button. By holding this button down, the meter needle should move to any portion of the small central circle (Fig. 15). If not, the batteries are exhausted and must be replaced.



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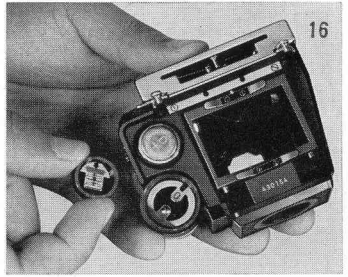
◆ **Exchanging the batteries**

To exchange the batteries, remove the finder, and open the battery chamber on the bottom by unscrewing the lid. Insert new batteries into the chamber each with the plus (+) side facing outward, as indicated on the backside of the lid. (Fig. 16)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Caution!

- No battery should be thrown into a fire.
- Avoid heating the battery.
- Never form a short circuit between the plus and minus sides of the battery.
- Never try to disassemble or recharge the battery.

◆ **Mercury batteries (1.3V×2) to be used for the finder generally:**

Mallory PX13, RM-625R, Eveready E625, G.E. No. 625

FINDER SCREENS AND LENSES

The right chart has been prepared to assist you in choosing the suitable type of screen for the lens being used.

◆ **For focusing and composing**

◎=Excellent

Uniformly bright image field is obtained from edge to edge. However, for the lens marked ※ in addition, use the surrounding matted area, because the central split-image, microprism or crosshairs portion cannot be used for focusing.

○=Usable

These screens provide little obstruction in practical use, although they do not exhibit so satisfactory viewfield over the entire area, because of slight vignetting or moire phenomenon (only in the case of microprisms). The defects affect by no means the image registered on the film.

□=The screen is unusable, because of image darkening or considerable moire over the screen area.

◆ **For exposure measurement**

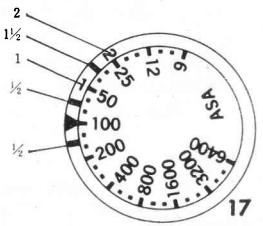
◎ ○ =Only full-open measuring method can be applied.

For the combination of the lens and screen type without figure, use the triangular, red index, no compensation being required.

For the combination with the figure, it is necessary to readjust the ASA setting, that is, to bring the index corresponding to such a figure not the triangular red one, to the film speed (ASA) being used.

▨=Only the stop-down measuring method should be applied.

■=Neither full-open nor stop-down method can be employed. Therefore, these cases permit only focusing but not exposure measurement



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Lens	Finder Screen	A	J	B	E	F	D	C	G1	G2	G3	G4	H1	H2	H3	H4
Wideangle	20mm f/3.5	◎	◎	◎	◎	◎			◎½				◎½			
	24mm f/2.8	◎	◎	◎	◎	◎				◎				◎		
	28mm f/3.5	◎	◎	◎	◎	◎			◎½				◎½			
	35mm f/2.8	◎	◎	◎	◎	◎			◎				◎	◎		
	35mm f/2	◎	◎	◎	◎	◎½			◎½	◎½			◎½	◎½		
Normal	45mm f/2.8	◎	◎	◎	◎	◎			◎				◎			
	50mm f/2	◎	◎	◎	◎	◎½			◎½	◎½			◎½	◎½		
	50mm f/1.4	◎	◎	◎	◎	◎				◎½				◎½		
	55mm f/1.2	◎	◎	◎	◎	◎				◎				◎		
Telephoto	85mm f/1.8	◎	◎	◎	◎	◎½				◎½			◎½	◎½		
	105mm f/2.5	◎	◎	◎	◎	◎½				◎			◎½	◎		
	135mm f/3.5	◎	◎	◎	◎	◎	○½	○½		◎1				◎½		
	135mm f/2.8	◎	◎	◎	◎	◎	○½	○½		◎				◎		
	200mm f/4	◎	◎	◎	◎	◎½	○½	○½		◎1½				◎1	○1	
	300mm f/4.5	◎	◎	◎	◎	◎½	○½	○½			■			○1½	◎1½	■
Zoom	43—86mm f/3.5	◎	◎	◎	◎	◎				○½			○	◎½		
	50—300mm f/4.5	◎	◎	◎	◎	◎½					■	■			■	■
Tele-Zoom	85—250mm f/4—4.5	◎	◎	◎	◎	◎½					■	■			■	■
Micro	55mm f/3.5	◎	◎	◎	◎	◎½				○½				◎½		
P C	35mm f/2.8	◎※	◎	◎	◎	◎										
Telephoto	105mm f/4	◎	◎	◎	◎	◎								■		
For Bellows	135mm f/4	◎※	◎	◎	◎	◎									■	
Medical	200mm f/5.6	◎※	◎	◎	◎	◎								■		
Telephoto	400mm f/4.5	◎	◎	◎	◎	◎	○	○			■	■			■	■
	600mm f/5.6	◎	◎	◎	◎	◎	◎	◎※			■	■			■	■
	800mm f/8	◎※	◎	◎	◎	◎	◎	◎※			■	■			■	■
	1200mm f/11	◎※	◎※	◎	◎	◎※	◎	◎※				■			■	■
Reflex	500mm f/5	◎※	◎	◎	◎	◎	○	○						■	■	■
	1000mm f/11	◎※	◎※	◎	◎	◎※	◎	◎※			■	■			■	■
Tele-Zoom	200-600mm f/9.5—10.5	◎	◎	◎	◎	◎	◎	◎※			■	■			■	■

1. Exposure compensation in practice

In special photography such as close-up photography, repro-copying, slide-copying and photomicrography, exposure compensation* will be required to some extent. In practice, the compensation can be performed by any one of the three methods as below:

◆ Reset the exposure compensation value by turning the aperture ring and/or shutter speed scale.

◆ Beforehand, on the film speed (ASA) dial on the top of the finder, set the red, triangular index or the index selected according to the screen type to a film speed number decreased or increased by as many marks as given in each case. Thereafter, center the pointer needle by manipulating the aperture ring of the lens and/or the shutter speed selector.

For example, when using the film of ASA 100, if a decrease by 4 marks is necessary, set the index to ASA 40 and if an increase by 5 marks, set the index to ASA 320.

◆ If the above range of compensation extends beyond that of the film speed (ASA) dial scale, proceed as follows:

First, center the pointer needle by adjusting the aperture and/or shutter speed. Then, open or close more the aperture stop or change the shutter speed by as many marks as given in parentheses in each case, the index on the film speed dial remaining at the same position.

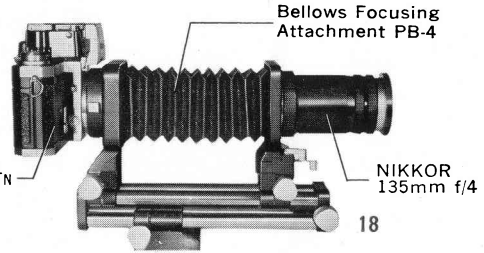
* The best way to determine the correct compensation value is by your experimental results, considering the values given in each case as a guide.

2. Close-up attachments and exposure determination

The following Nikon close-up attachments are available to take picture of objects at a closer distance than the shortest focusing distance of the lens:

- Close-up attachment lenses (No. 0, No. 1, No. 2)
- Extension ring model E_2
- Extension ring set model K
- Bellows focusing attachments model 3 and PB-4

With the close-up attachment lenses attached onto the front of the camera lens, the full-open measuring method is used in the same way as without attachment lens. With the extension rings or bellows, the exposure is determined by the stop-down method.



◆ Close-up lenses

In addition, the following specially designed close-up lenses are available:

- **NIKKOR 135mm f/4**
  Exclusively used on the Bellows for infinity distance to 1/1 reproduction ratio.
- **Micro-NIKKOR Auto 55mm f/3.5**
  Permits focusing from infinity distance to 1/2 reproduction ratio.
  By inserting M-Ring, the reproduction ratios are extended to 1/1.

Nikon Photomic FTN with Micro-NIKKOR Auto

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3. Micro-NIKKOR Auto lens

◆ **For reproduction ratios up to 1/2 (without M-Ring)**
Full-open method is used. However, for reproduction ratios between 1/10 and 1/2, compensation is necessary as shown in the table below:

Repro. ratio \ Aperture	f/3.5	f/5.6	f/8	f/11	f/16	f/22	f/32
up to 1/10 incl	No compensation is necessary						
1/10 to 1/4 incl		Stop down 1/2 stop more, after exposure setting					
1/4 to 1/2 incl		Stop down 1 stop more, after exposure setting					

◆ **For reproduction ratios from 1/2 to 1/1 (with M-Ring)**
When M-ring is used for 1/2 to 1/1, use the stop-down measuring method.
Turn the aperture ring and/or shutter speed scale while depressing the depth of field preview button on the camera.
In this case, special caution should be taken to prevent extraneous light entering the finder eyepiece.

4. Repro-copying

Originals to be reproduced may generally be classified into two types:

Class 1. Photographs, pictures and continuous tone materials, all with tonal gradations.

Class 2. Documents or line drawings with little or no gradation and therefore of strong contrast.

◆ **For Class 1 (Originals with gradations)**

Determine exposure in the same way as in general photography. Furthermore refer to "General Precautions" on p. 30.

◆ **For Class 2 (Originals of strong contrast)**

Determine exposure by measuring the brightness of the white portion of the original. When the original has more black portion than white (e.g. a material with white figures or letters on a black ground), determine exposure by measuring the brightness of another piece of white paper.

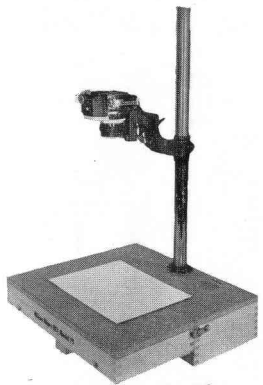
The compensation is as indicated as below, using either of the two methods.

Compensation	Decrease the film speed (ASA) 4 marks (Increase the exposure about 1⅓ stops)

Film being used: Color reversal, Color negative, Generally used panchromatic

◆ **Apparatus and lenses recommended for copying**

The **Nikon Repro-copy Outfit Model PF** (Fig. 20) is a convenient accessory.



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The best lens to be used for copying work is the **Micro-NIKKOR Auto 55mm f/3.5.** No extension ring or close-up attachment lens is needed, because the lens can be extended up to 1/2 reproduction ratio, and with M-Ring inserted it is focused for 1/1.

It is not recommended to use the NIKKOR Auto 50mm f/1.4 or 55mm f/1.2 or 58mm f/1.4 lens, but rather the NIKKOR Auto 50mm f/2 lens, because of its higher image quality insofar as close-ups are concerned. With this lens alone which permits no reproduction ratio larger than 1/10, it is necessary, for copying, to use Extension Ring E_2 or Extension Ring Set K or Close-up Attachment Lenses No. 0, No. 1 or No. 2.

5. Slide copying

Slide copying is to make reproductions of original slides or negative films.

◆ **Determining exposure for reproducing images with continuous tone gradations (on the ordinary photographic film)**

Determine exposure by the stop-down method in the same way as in general photography. Furthermore, refer to "General Precautions" given on p. 30.

◆ **Determining exposure for reproducing images with strong contrast (on documents or line drawing film)**

Good results will be obtained by the compensations as below using either of the compensation methods given on p. 24.

- When copying slides with letters or figures on transparent ground.

Compensation	Decrease the film speed (ASA) 4 marks (Increase the exposure about 1⅓ stops)

- When copying slides with transparent figures or letters on dark ground.

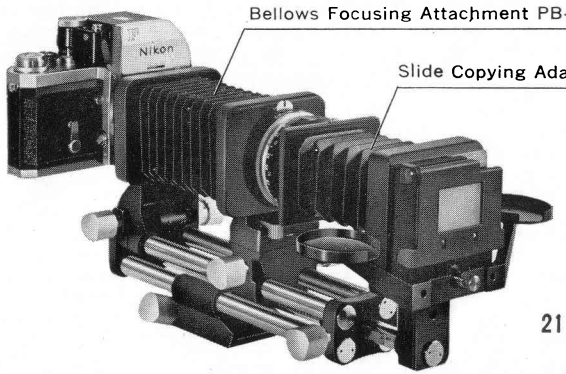
Compensation	Increase the film speed (ASA) 5 marks (Decrease the exposure about 1⅔ stops)

Film being used: Color reversal, Color negative, Generally used panchromatic

◆ **Apparatus recommended for slide copying**

The use of the Slide Copying Adapter PS-4 in conjunction with the Bellows Focusing Attachment PB-4 is recommended. (Fig. 21) Depending upon the lens being used, a different magnification range will be obtained.

For full details, refer to the instructions of each apparatus.



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6. Photomicrography

◆ **Determination of exposure in photomicrography**

Apply the stop-down method. After centering the pointer needle, make compensation as below using either of the two methods given on p. 24.

Compensation	Decrease the film speed (ASA) 3 marks (Increase the exposure about 1 stop)

- The above compensation values have been obtained by the experiments using the C-type finder screen in the camera which is especially suited for photomicrography.
- Exposure in photomicrography will vary with staining, distribution of objects, contrast on the specimen, etc. It is recommended to determine the compensation value by experiment.

◆ **Using Microflex PFMF**

1) Set the shutter speed on the PFMF to T. Open the shutter. Viewing the image in the viewfield of the camera finder and changing the shutter speed on the camera, center the pointer needle of meter.
2) Read out the shutter speed when the needle is centered. Set the shutter speed on the PFMF to its speed. (Now, close the shutter on the PFMF and the viewfield will be dark.)
3) Then, set the shutter speed on the Photomic FTN to T and open the shutter of the camera.
4) Finally, operate the shutter on the PFMF to give exposure.
5) Before removing the camera from the PFMF, close the shutter of the camera by setting it to a position other than T.

◆ **Photomicrographic attachments recommended**

Photomicrographic attachments	Remarks	
Microflex PFMF	Attaches to all types of Nikon microscopes. For use on Nikon Stereoscopic and Polarizing microscopes, specific eyepiece adapters are necessary.	Provided with ocular and projection finders, built-in shutter and X-synch. contact.
Microscope-to-camera adapter tube Model 2	Attaches to biological microscopes with vertical eyepiece tube of 25mm in diameter.	The shutter of camera is used.
Macro-bellows attachment	For lower magnifications. Replaced with the body tube of Nikon biological microscopes.	

Note:

- Additional use of Nikon Photomicrographic Stand is recommended to avoid vibration, when the shutter of camera is used and the microscope is equipped with an objective higher than 10x.
- Among the finder screens the type A, B, C or J with ground surface or especially the type C with cross-hairs is recommended.
- Other than the attachments given in the above table, Microflex Model EFMF and AFMF with built-in exposure meter are available.

7. General precautions in exposure determination for copying and photomicrography

- When using a color reversal film, generally with a narrow latitude, it is recommended that another picture, in addition to the one exposed by the meter needle centering, be taken as follows:
  with one stop increased exposure ..... when the object gives a somewhat brighter impression
  with one stop decreased exposure ..... when the object gives a somewhat darker impression

- Micro-copying film is also usually of narrow latitude, and will give various results depending upon the emulsion number, and other variable factors such as type of developer, time, temperature of development, etc. In this case it is advisable to make trial exposures.

- In order to minimize vibration, the use of a cable release is necessary.

- At high magnification where no vibration is permissible, exposure can be made by switching the illuminator on and off.