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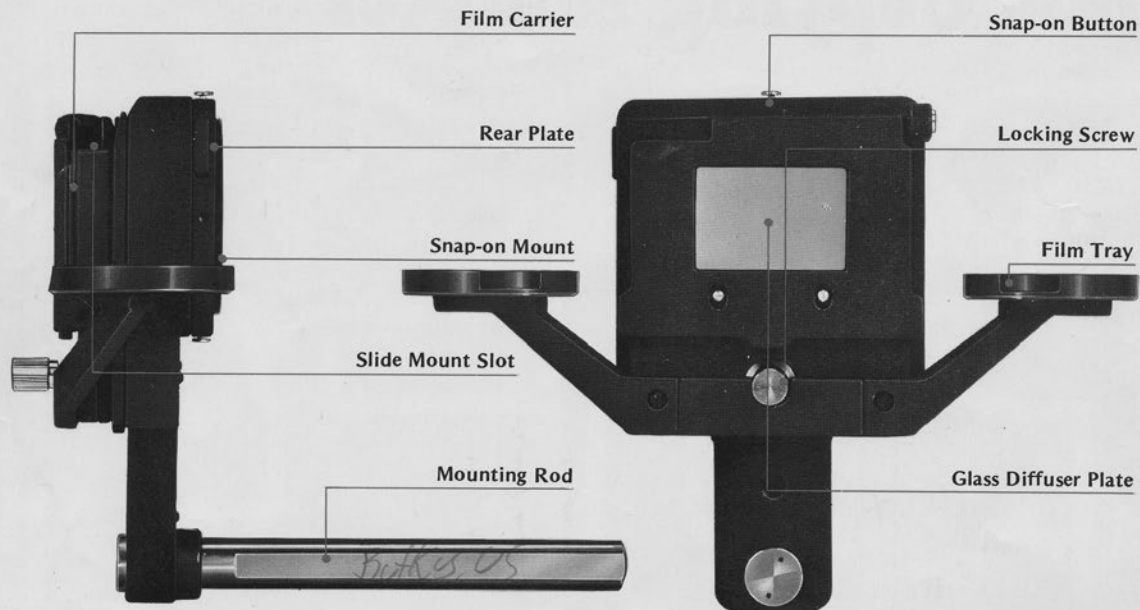
# Slide Copying Adapter

# PS-4

*Ref. 5.0.0*

**Nikon** INSTRUCTION MANUAL

# NOMENCLATURE

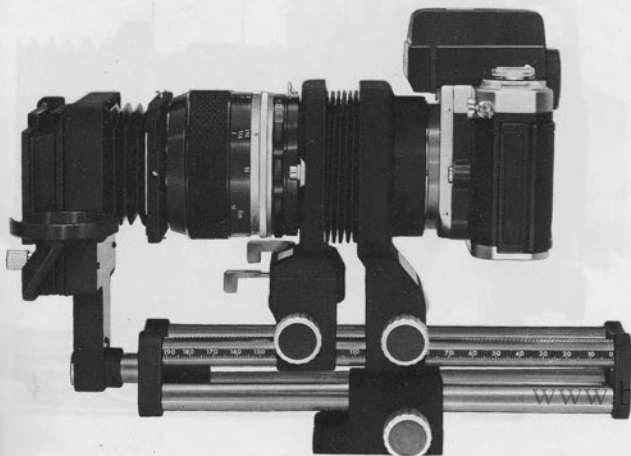


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## FOREWORD

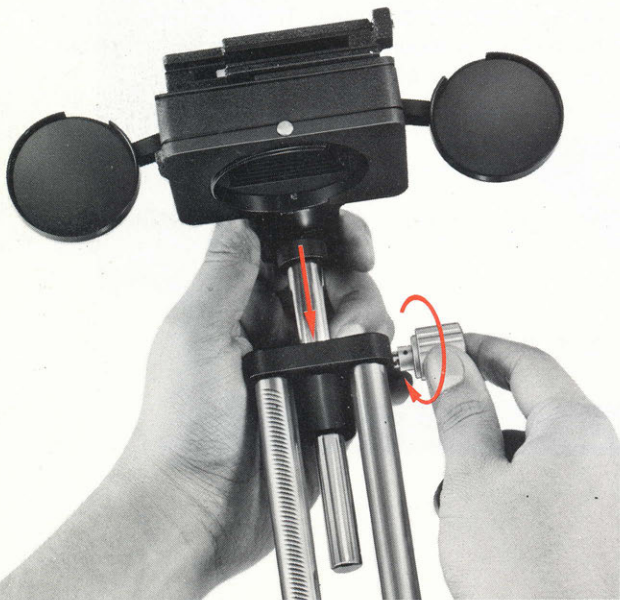
The PS-4 Slide Copying Adapter allows you to copy black-and-white or color 35mm negatives and transparencies, mounted or unmounted, either full-sized or cropped and magnified. It is used with either the PB-4 or PB-5 Bellows Focusing Attachment. The original film can be moved up and down or sideways for cropping. The adapter has trays for rolls of unmounted film and a magnet to hold the bellows shut when not in use.



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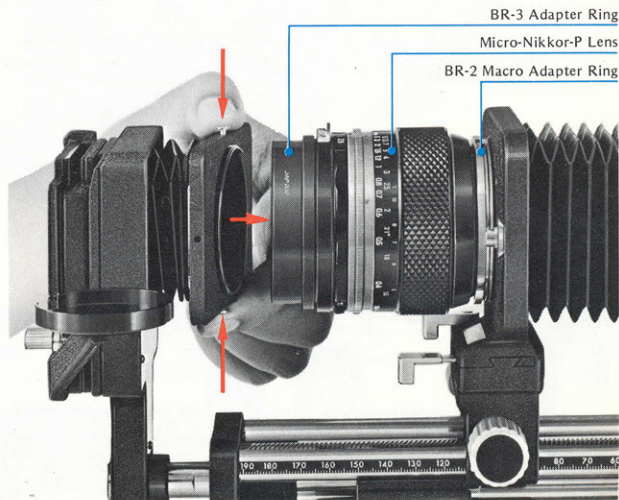
## SETTING-UP

1) Loosen the locking knob of the slide copying adapter socket at the front of the bellows focusing attachment and slide the mounting rod of the PS-4 into the hole. Retighten the locking knob to lock the PS-4 in place.



2) Pull out the rear plate of the PS-4 by the indent on the left side and connect it to the front rim of the lens in use by pressing the snap-on buttons on the top and bottom of the rear plate.

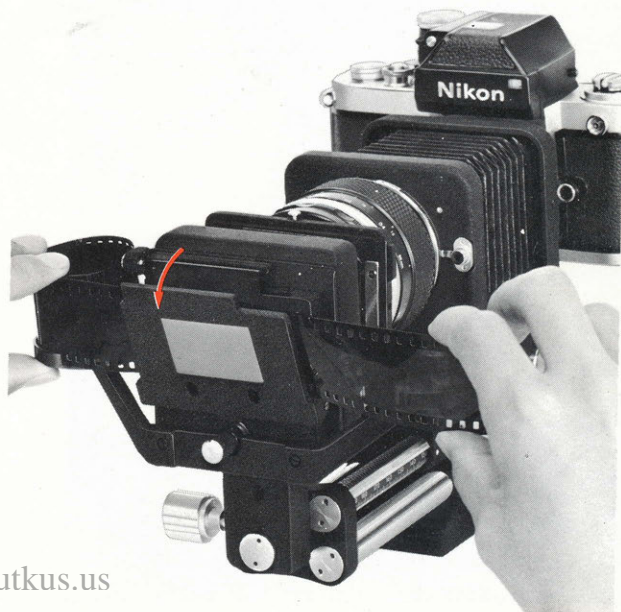
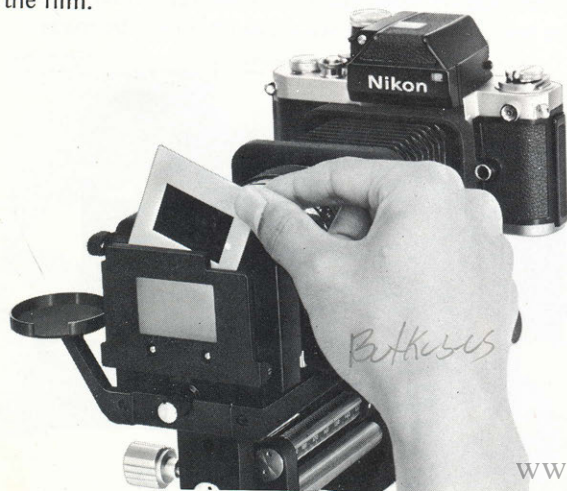
When the lens is mounted in reverse position on the bellows attachment, use the BR-3 Adapter Ring to connect the PS-4 to the rear of the lens. The BR-3 ring has a bayonet at one end that fits onto the lens and a screw mount at the other end to accept the PS-4 bellows.



### 3) Insertion of slide or film:

**Mounted transparencies** Insert the slide into the slot on top of the film carrier with the emulsion side facing the opal glass plate. The slot will accept any slide mount up to 4mm thick.

**Film roll or strips** Pull the opal glass plate forward and slip the film into the channel with the emulsion side facing the glass. Then snap the plate shut again. Trays on either side of the film carrier hold the rolled-up ends of the film.



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## DETERMINING THE REPRODUCTION RATIO

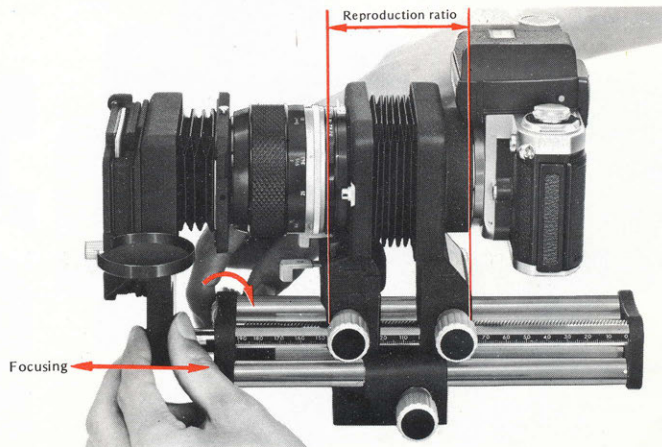
Determination of the reproduction ratio is made on the bellows focusing attachment. First, set the distance scale on the lens in use at infinity. After consulting the table in your bellows instruction manual, adjust the camera and lens panels of the bellows attachment to give the correct extension for the desired reproduction ratio.

## FOCUSING

Loosen the locking knob at the front of the bellows attachment. Look through the camera viewfinder and slide the PS-4 back and forth until the subject is in sharp focus. Then retighten the locking knob to hold the set-up in place.

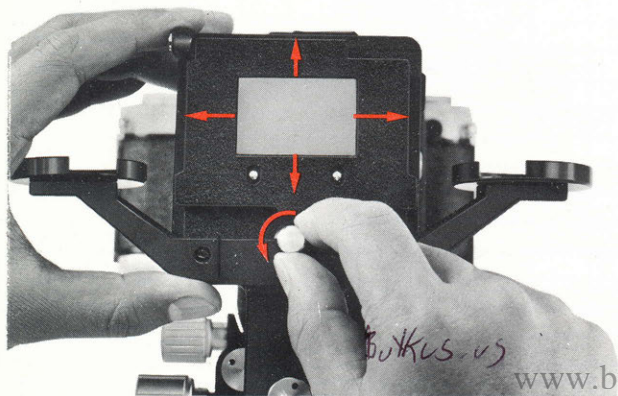
For maximum image brightness during focusing, open up the lens to its maximum aperture.

Fine focus can also be made by controlling the bellows extension, or by turning the focusing ring on the lens. However, precise determination of the reproduction ratio on the bellows extension scale can no longer be made.



## CROPPING

Loosen the locking screw on the film carrier and move it up or down (up to 6mm) or sideways (up to 9mm) in either direction to permit magnification of any desired part of the original slide or film. Retighten the locking screw to clamp the film carrier at the desired position. To make an exact duplicate of a 35mm original, center the film carrier; it clicks into place.



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## DETERMINING EXPOSURE

### With built-in TTL meter

When a bellows attachment is inserted between the lens and the camera body, the lens diaphragm will not couple to the meter of the Photomic-series finders or the Nikkormat cameras. The TTL metering system, however, can still be used to measure exposure by the stop-down method (see your bellows attachment instructions).

**Note:** For originals with continuous tonal gradations, determine the exposure in the usual way with the stop-down method. To dupe slides with letters or figures on a transparent background or transparent figures on a dark background, exposure correction may be necessary for better results. The instruction booklet for your Nikon or Nikkormat camera gives approximate guidelines for compensation.

### With non-TTL meter

Exposure determination with a meter that is not coupled to the camera is made by measuring either the incident light in front of the opal glass diffuser or the reflected light using a standard reflector plate. The basic exposure reading must be multiplied by the exposure factor depending on the reproduction ratio (consult the bellows instruction manual).

**Note:** Accurate exposure determination for electronic flash is not possible except by trial and error, since published guide numbers do not apply in close-up work. Make a series of test exposures with a standardized setup to find your own guide numbers.

# PHOTOGRAPHIC TIPS

## Choosing a lens

Any Nikkor lens from 20mm to 85mm will give satisfactory results with the PS-4, although the 50mm f/2 is most commonly used. The GN Auto Nikkor 45mm f/2.8 is also an excellent choice. The Micro-Nikkor-P Auto 55mm f/3.5 works best for precise copying.

Where reproduction ratios greater than 1:1 are required,

the lens should be used in the reverse position.

Since reproduction ratios vary according to the focal length of a lens, the desired reproduction ratio may influence the choice of a lens to be used. The table below shows the range of reproduction ratios for each usable lens.

Lens	Position	Reproduction Range												
		12X	11X	10X	9X	8X	7X	6X	5X	4X	3X	2X	1X	1/2X
20mm f/4	Reverse													
24mm f/2.8	Reverse													
28mm f/2, f/2.8, f/3.5, f/4 PC	Reverse													
35mm f/1.4, f/2	Reverse													
35mm f/2.8	Reverse													
35mm f/2.8 PC	Reverse													
45mm f/2.8 GN	Normal													
	Reverse													
50mm f/1.4	Reverse													
	Normal													
50mm f/2	Reverse													
	Normal													
55mm f/1.2	Reverse													
	Normal													
55mm f/3.5 Micro	Reverse													
	Normal													
85mm f/1.8	Reverse													
	Normal													

Note: The BR-3 ring is not attached to the 20mm f/4 and 24mm f/2.8 lenses in the reproduction range marked by the blue bar, but light-shielding efficiency remains unimpaired.

## Choosing a film

Besides duplicating originals, the PS-4 can be used to make a black-and-white negative or intermediate negative from a color transparency, or to make a copy negative. Choosing the right type of film to use is important for best results. The table below shows which type of film is suitable for a specific purpose.

Original		Purpose	Type of film recommended
Black-and-white negative	Ordinary gradation	Black-and-white slide projection	Microfilm, Diapositive film
	High contrast	Black-and-white slide projection	Negative film for general use
Black-and-white slide		Black-and-white slide projection Intermediate negative for making print	Black-and-white reversal film Negative film for general use
Color negative		Black-and-white slide projection	Panchromatic negative film for general use
Color slide		Color slide projection Color negative for color print Black-and-white slide projection Intermediate negative for black-and-white film	Color reversal film Color negative film Black-and-white reversal film Panchromatic film for general use

## FEATURES/SPECIFICATIONS

### Choosing a light source

Natural daylight coming through a north window is usually used as a light source. However, artificial light sources, such as photofloods and electronic flash, are preferable since they provide light of constant intensity and other advantages.

Whenever color film is used, the color temperature of the light source must match that of the film, otherwise a color temperature correction filter is necessary. The table below shows appropriate combinations of film, light source and filter.

When using a heat-producing light source, such as photofloods, be sure to place the lamps at an adequate distance from the original film to avoid damaging it.

**Film:** Either mounted slides or strips of 35mm film can be copied.

**Lens:** Nikkor Auto 20mm f/4 to 85mm f/1.8

**Shifting range for cropping:** 6mm up or down, 9mm to either side

**Reproduction range:** 1/1.2X to 2.4X using Nikkor Auto 50mm f/2 in normal position; 1.6X to 4.4X with the 50mm f/2 in reverse position

**Bellows extension:** From 10mm to 70mm

**Dimensions:** 162mm long x 188mm wide x 132mm high

**Weight:** 500g

Film used	Light source	Filter
Daylight-type color film	Photo-floodlight	B 12
	Iodine lamp	B 12
	Blue floodlight lamp	Not needed
	Speedlight	Not needed
Tungsten-light-type color film	Photo-floodlight	Not needed
	Iodine lamp	Not needed
Black-and-white film	Photo-floodlight	Not needed
	Speedlight	Not needed
	Natural light	Not needed
	Fluorescent light	Not needed
	Iodine lamp	Not needed

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