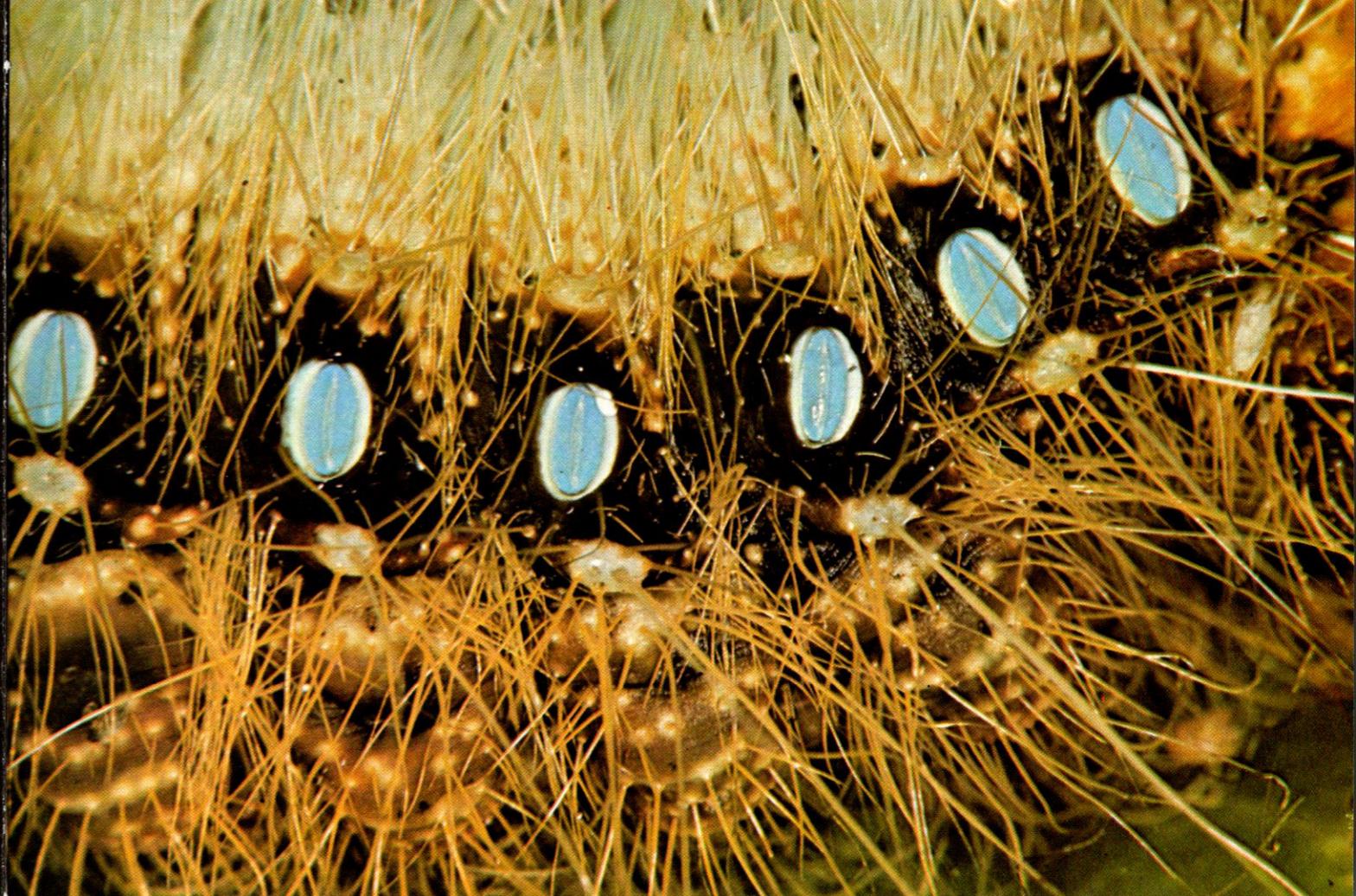
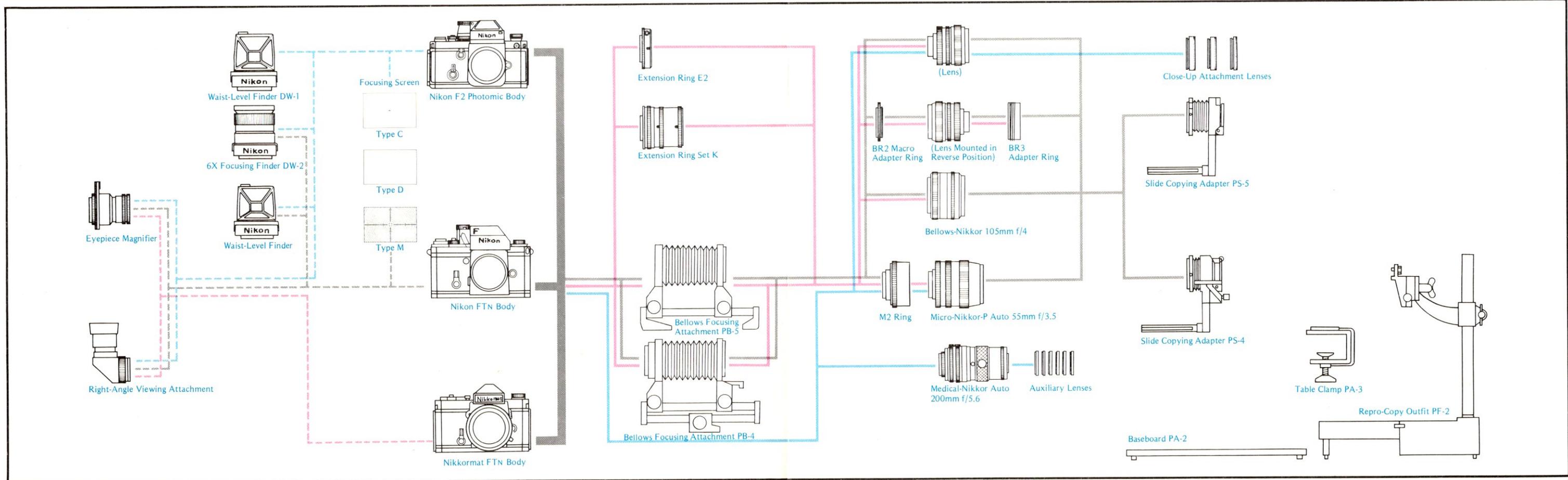




Nikon
Close-Up
Equipment



Nikon close-up system



Discover the magic of Close-ups

If you haven't tried close-up photography, you're missing half the fun of owning a Nikon or Nikkormat camera. And with Nikkor lenses and accessories, you can

take exciting close-ups without going any further than your own backyard. All you have to do is take a closer look at the world all around you.

Nikon offers the most complete and comprehensive system for close-up photography ever put together. From simple attachment lenses to high-precision equipment for scientific research, every item is designed and built with the same painstaking attention to quality that earned Nikon its worldwide reputation.

With Nikon accessories the possibilities are endless. Whether you're a demanding professional in search of a specialized tool, or a weekend hobbyist who wants to add a new dimension to picture-taking enjoyment, Nikon has the equipment you need to take the pictures you want to take.





Easy-to-use screw-on accessories



Close-up attachment lenses

Compact and easy to use, attachment lenses are available in three powers, Numbers 0, 1 and 2. They screw right onto the front of any lens with a 52mm thread, either individually or in combination, to let you shoot medium close-ups without having to calculate exposure increase or losing the auto-diaphragm feature of Nikkor lenses. These lenses are fine for photographing subjects like flowers, insects, etc. which do not require extreme magnification.





For greater magnification Extension rings



If you want to shoot at closer distances than the attachment lenses allow but would still like a compact, economical accessory, consider one of the extension rings that fit between the camera and lens.

The **E2 Ring** adds an extension of 14mm to the lens and has a built-in plunger that is pressed to open the lens diaphragm to full aperture for bright viewing and focusing. Releasing the plunger stops down the lens to taking aperture.

The more versatile **Extension Ring Set K** consists of five rings which are used individually or in various combinations to get a variety of magnifications. The rings can be used with any lens from 20mm to 300mm. The set comes in a leather case.



E2 Ring



K Ring Set



A superb two-in-one close-up lens

Micro-Nikkor-P Auto 55mm f/3.5



Designed primarily for close-up photography, this remarkable lens features superb resolution and excellent image contrast and color correction. Its dual-helical focusing mount lets you focus from infinity down to 1/2X magnification. Add the M2 Ring which comes with the lens and you can shoot close-ups down to life-size. The Ring bayonets on or off in seconds. With a bellows focusing attachment or other accessory, you can even take photographs larger than life-size.

You can leave the lens right on the camera and use it for candid, landscapes or other general subjects — performance is virtually unchanged throughout the entire focusing range.





A close-up system for scientific and industrial photography

Medical-Nikkor Auto 200mm f/5.6



Supplied with six auxiliary lenses, the Medical-Nikkor offers a choice of 11 magnifications from 1/15 actual size to 3X to meet virtually any medical, industrial or scientific photographic requirement. The lens has its own built-in electronic flash for shadowless lighting or for use in confined spaces and a focusing lamp to illuminate the subject during focusing. The correct lens aperture is set automatically in accordance with the magnification and the speed of film in use, and the long focal length allows close-up shooting from a distance. Even inexperienced photographers can count on quality results with this lens.





Versatile attachments for macrophotography

Bellows focusing attachments

The most flexible of all close-up accessories, bellows attachments are essential for macrophotography (photography at larger-than-life-size magnification). They accept Nikkor lenses from 24mm wideangle to 300mm telephoto and can be mounted on a tripod or Nikon Repto-Copy Outfit.



PB-4

This is the most versatile of all the Nikon Bellows Focusing Attachments. The front lens panel swings and shifts to allow perspective correction and control over depth of field. And the unit features dual twin tracks one above the other so the entire camera/lens/bellows can be moved along the lower tracks for fine focusing without changing lens-to-film distance.

With one of the slide copying adapters, the bellows can be used to duplicate or crop 35mm film or transparencies. Magnification extends from 1.2X to 3.6X with the 50mm f/2 lens (from 1.6X to 4.4X when the lens is mounted in reverse with the BR-2 Macro Adapter Ring). With the 24mm wideangle lens, magnification extends all the way to more than 10 times life-size.

Bellows-Nikkor 105mm f/4 lens

Designed exclusively for use with bellows focusing attachments, this lens focuses continuously from infinity to 1.3X magnification when used with the PB-4 or PB-5 bellows unit. Focusing is done by adjusting the bellows extension. The lens has a preset diaphragm with two intermediate click stops between each pair of settings for more precise exposure adjustments.



Bellows-Nikkor
105mm f/4

*Small sculpture
and finishing chisel*

PB-5

A simplified version of the PB-4 but without the lower tracks or swing/shift provision. Accepts either PS-4 or PS-5 slide copying adapter.

Slide copying adapters

Designed for use with Bellows Focusing Attachment PB-4 or PB-5, **Slide Copying Adapter PS-4** can be used to duplicate mounted 35mm transparencies or unmounted film in rolls. A pair of trays holds a roll of film. Originals can be moved up and down or sideways for

cropping. The bellows folds up when not in use and a magnet holds it shut for protection.

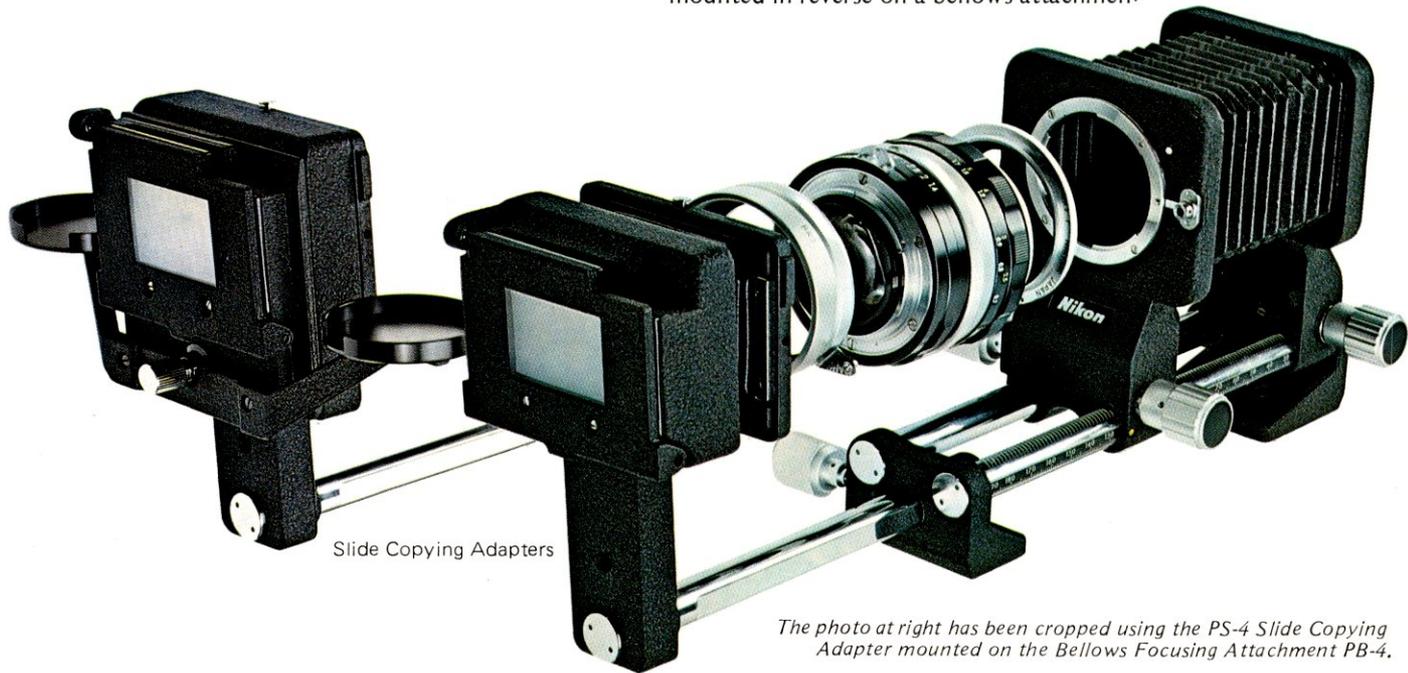
Slide Copying Adapter PS-5 is similar to the PS-4 but without film trays or shifting mechanism. Intended mainly for exact duplication of slides.

BR-2 Macro Adapter Ring

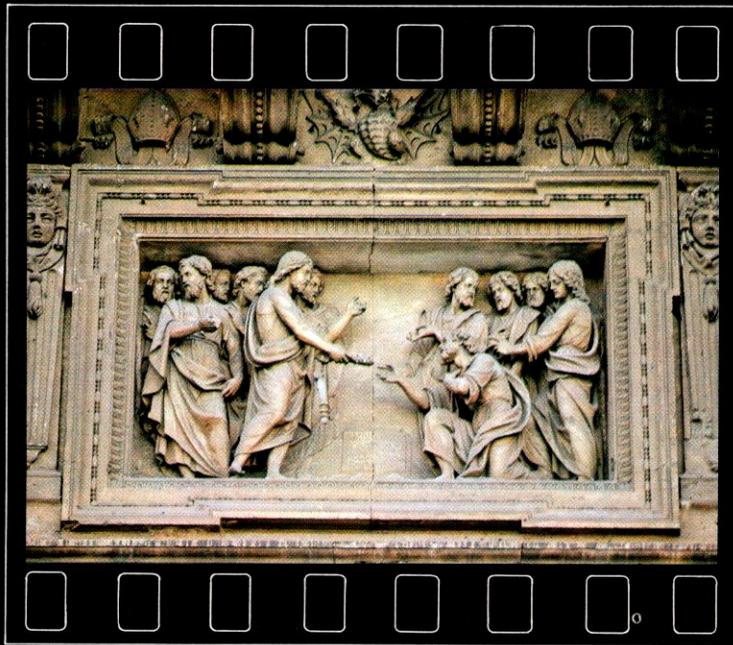
For mounting any lens with 52mm screw-threaded front mount in reverse position on the bellows unit when magnification greater than life-size is desired.

BR-3 Adapter Ring

Used to connect Slide Copying Adapter PS-4 or PS-5 to a lens mounted in reverse on a bellows attachment



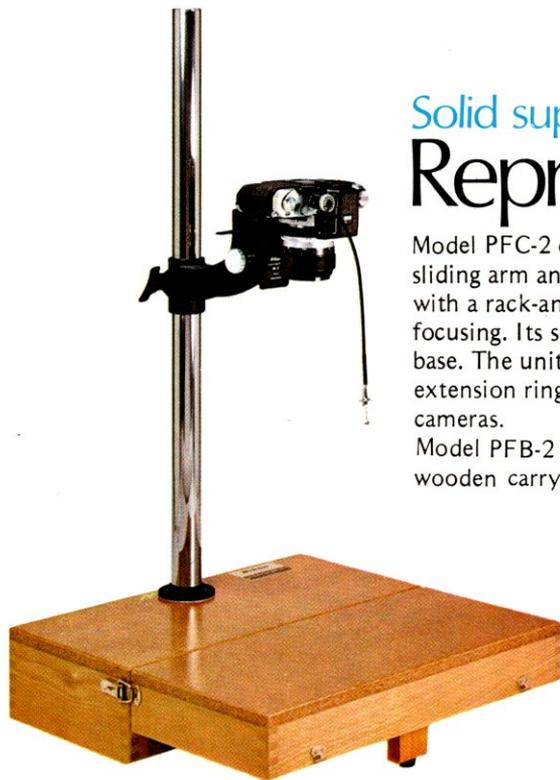
The photo at right has been cropped using the PS-4 Slide Copying Adapter mounted on the Bellows Focusing Attachment PB-4.



REPUBLIQUE FRANÇAISE



EGLISE SAINTE MADELEINE - TROYES



Solid support for convenient copying Repro-copy outfit

Model PFC-2 consists of an upright column and a sliding arm and camera mount provided with a rack-and-pinion mechanism for fine focusing. Its solid wooden carrying case also serves as a base. The unit can be used with a bellows attachment, extension rings or other accessory mounted on Nikon cameras.

Model PFB-2 is provided with a baseboard instead of the wooden carrying case.

Shadowless illumination for close-ups

Ringlight units

Lightweight, compact ringlights are used with the Nikon Speedlight to provide even, shadowless lighting for close-ups or macrophotography. They can be used at full power or cut to 1/4 of full illumination.

Ringlight SR-1 fits any Nikkor lens from 24mm to 200mm with 52mm attachment size. It is designed for short-range and close-up work.

Macro Ringlight SM-1 is similar except that it is designed for use with lenses from 24mm to 135mm mounted in reverse position on a bellows for macrophotography. A dual-purpose plunger opens the lens aperture diaphragm to maximum aperture and simultaneously switches on a built-in focusing lamp for bright viewing and focusing.



Viewing/focusing aids

Waist-Level Finder

Interchanges with the Nikon viewfinder for greater convenience when shooting at waist-level or with the camera mounted on a bellows/tripod setup or copy stand. Has a built-in magnifier. Folds up when not in use and snaps open at the touch of a button.

Right-Angle Viewing Attachment

Screws into the eyepiece of the Nikon or Nikkormat finder to permit viewing at a 90° angle. Magnification is approximately 0.6X with a 50mm lens.

Eyepiece Magnifier

Magnifies the viewfinder image 2 times for pinpoint focusing. The magnifier screws into the eyepiece of the Nikon or Nikkormat viewfinder and swings out of the way when not used.

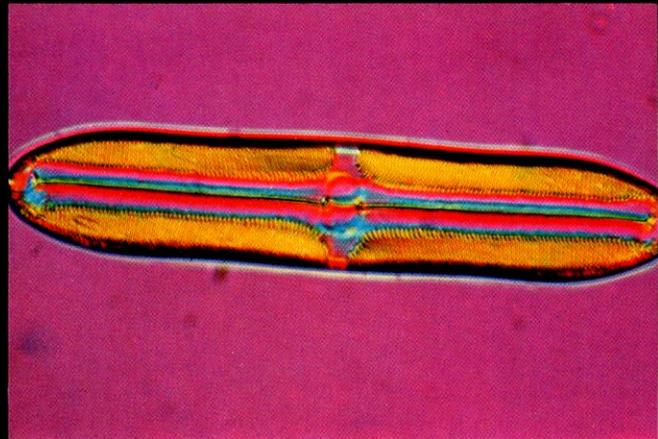
Focusing Screens

Seventeen types of interchangeable focusing screens are available for the Nikon. Although the standard Type A screen which comes with the camera can be utilized for close-ups, Types C, D and M offer more convenience. Type E is ideal for some copying applications because of its etched horizontal and vertical lines.

6X Focusing Finder

Perfect for critical close-up work, this finder interchanges with the Nikon viewfinder and magnifies the entire viewing field six times. Viewing is done from above. A split-image rangefinder or microprism screen makes possible pinpoint focusing of even the small images produced by short focal length lenses. A wide range of diopter adjustments is possible.





Special-purpose accessories for macrophotography and photomicrography

Technically speaking, macrophotography and photomicrography differ from close-up photography. However, as natural extensions of general and close-up photography they have many uses, particularly in the scientific, medical and industrial fields. The accessories described on these pages were created to answer the demand for high-precision equipment for these and similar applications.



*Diatom (right)
Watch mechanism(left)*

Multiphot

A pair of upright columns on a heavy 500 x 500mm base holds a movable H-shaped guide rail which provides rock-solid, vibration-free support for a Nikon F2 or Nikkormat camera, large format camera up to 4 x 5", cine-camera, bellows or other equipment. Four different high-resolution macro lenses are available to cover magnifications ranging from 1/3X to 40X. Diascopic illuminators, condensers, bellows units and a variety of other accessories make the Multiphot a highly versatile tool. Originally designed for macroscopic research on tissues and internal organs, it has other applications in macrophotography, photomicrography, cinemicrography, copying and close-up photography.

Microflex PFMF Prism Reflex Photomicrographic Attachment

The Microflex PFMF is used to attach a Nikon or Nikkormat camera to any standard microscope eyepiece tube for high-quality 35mm photographs of microscopic images. It has its own built-in leaf type shutter and X-synchronization contact.

Microscope-Camera Adapter Model 2

This simple device fits over any standard microscope eyepiece tube and utilizes the shutter and viewing system of a Nikon or Nikkormat camera for low power photomicrography. With the Model 2, even amateur photographers who own a microscope can take photomicrographs for study or pleasure.

Close-up basics

Close-ups needn't be more difficult than any other type of photography, especially with easy-to-use Nikon accessories. However, for best results it is worth remembering a few basic principles. Here are some tips to help you get more out of close-up photography.

Reproduction Ratio or Magnification

It means the ratio of the image size on film to the actual size of the subject. This relation is expressed in linear rather than areal measure. For example, at 1:5 reproduction ratio, the subject is five times as large as the image recorded on film. Reproduction ratio can be found by measuring the image size and dividing it by the subject size:

$$\text{Reproduction ratio} = \frac{\text{Image size}}{\text{Subject size}}$$

or by dividing the amount of lens extension from the infinity position by the focal length of the lens in use.

How to Select the Right Equipment

The choice of equipment depends on many factors: type of subject, magnification, purpose of photography, convenience, etc. The best advice is to study and compare the features of the various accessories listed in these pages, then make a decision based on your personal needs and budget.

Exposure for Close-Ups

When a Nikkormat FTN or Nikon Photomic-series finder is used, there is normally no need for exposure compensation: the TTL meter reads only the light passing through the lens regardless of magnification or whether or not a filter is used. However, when using a separate light meter it is usually necessary to increase the indicated exposure time or open up the lens when making close-ups with a bellows, extension tubes, etc. This is because the amount of light reaching the film plane decreases and the f-numbers

marked on the lens barrel are no longer applicable.

If an exposure meter other than a TTL meter is used, the following formula can be used to determine the correct amount of exposure adjustment:

$$K = (1 + M)^2$$

K is the exposure factor and M the magnification. For example, at 1X magnification, the exposure factor is equal to $(1 + 1)^2$ or 4. This means that the lens must be opened up two stops or the shutter speed decreased by two steps for correct exposure.



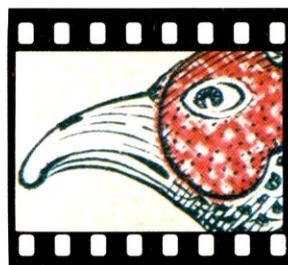
life-size



2X



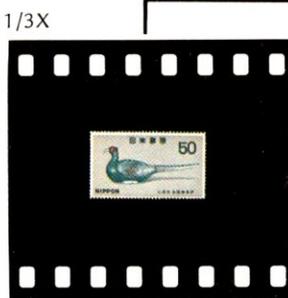
3X



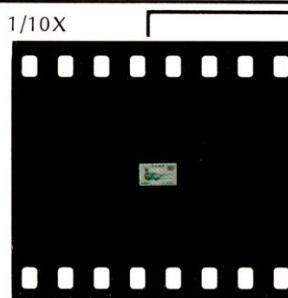
8X



1X



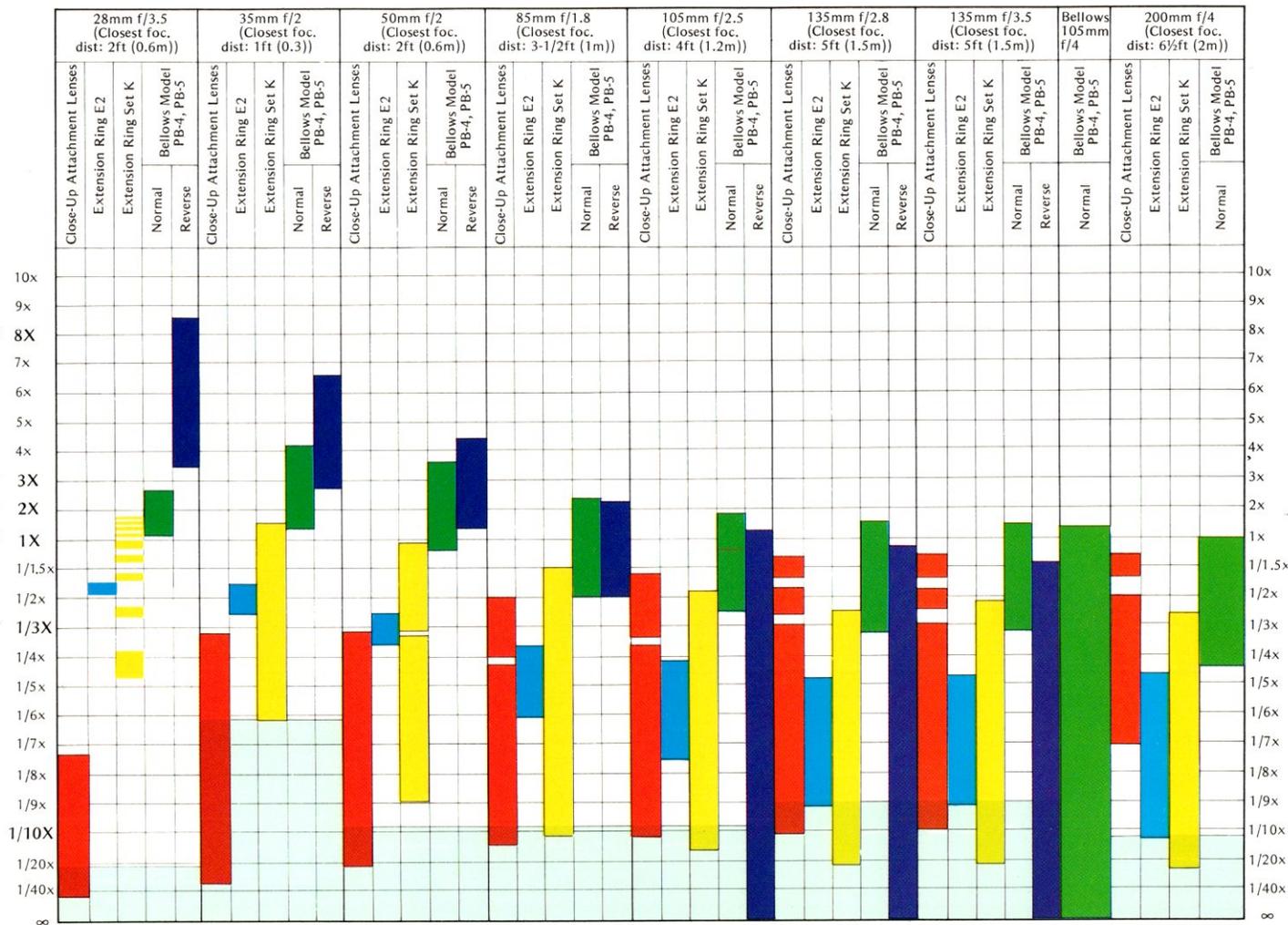
1/3X



1/10X

MAGNIFICATION RANGE OF VARIOUS NIKON CLOSE-UP ACCESSORIES

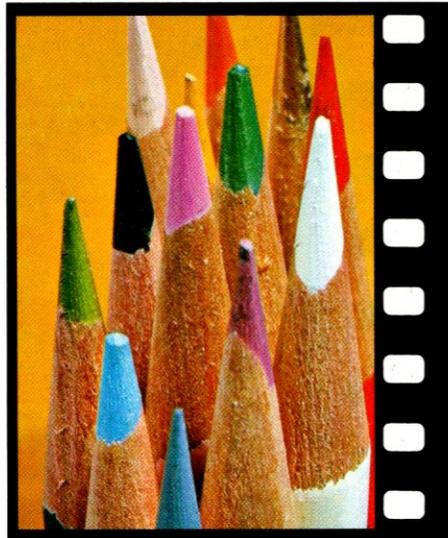
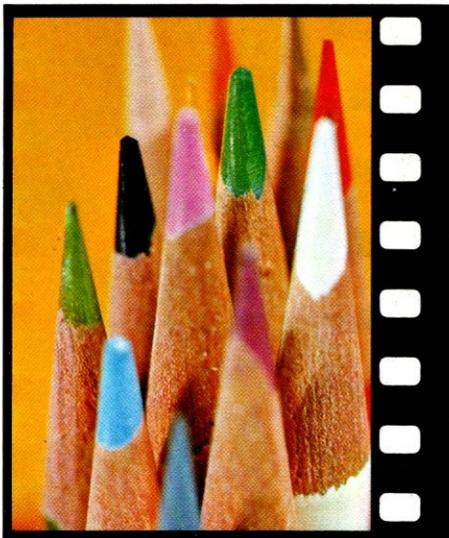
The breaks in the magnification range for the Close-Up Attachment Lenses and the Extension Ring Set K indicate the areas which these accessories do not cover. The light blue shaded area in the table shows the magnification range of each lens when used alone.



Depth of Field

As a general rule, depth of field decreases as the camera-to-subject distance decreases. In close-up photography it is extremely

shallow and decreases further as magnification is increased. It is advisable to stop down the lens to f/5.6 or a smaller aperture.



Focusing

Careful focusing is extremely important for good close-ups. Because of shallow depth of field, the slightest error can result in fuzzy pictures. In some cases, the use of a special-purpose focusing screen makes focusing easier (see page 21). The 6X focusing finder or the eyepiece magnifier also helps. To make sure the subject remains in fine focus, the use of a tripod or copy stand to hold the camera steady is recommended.

When making extreme close-ups, the light reaching the focusing screen decreases and the split-image or microprism may darken. In this case, focusing should be done on the ground-glass surface.

The models in this catalogue represent the design of our instruments at the time of printing. The design and specifications are subject to change due to further improvements.

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