UV-Nikkor 105mm f/4.5

Nikon

使用説明書

INSTRUCTION MANUAL

Ai-S

目次

各部の名称……4
はじめに……5
紫外線撮影の方法……6～10
　光源……6
　フィルター……6～7
　感光材料……8
　ピント合わせ……9
　露出……10
　拡大撮影……10
倍率を決めてから撮影するとき……11
被写界深度……11
露出の決め方―可視光線撮影時……12～13
　TTL露出計付きカメラボディの場合……12
　TTL露出計付きでない場合……13
赤外線撮影について……14
ファインダースクリーン……15
レンズ取扱上の注意……16
性能……17
被写界深度表……32
接写表……34
付属フィルターの分光透過曲線図……36

CONTENTS

NOMENCLATURE 18
BEFORE USING THE LENS 19
UV PHOTOGRAPHY . . . . . 20~25
　Light Source 20
　Filter . . . . . 20~21
　Photosensitive Materials 22
　Focusing 23
　Focusing on predetermined reproduction ratio 24
　Depth of field 24
　Exposure 25
　UV photography at high magnification 25
DETERMINING EXPOSURE IN VISIBLE LIGHT . . . . . 26~27
　With built-in TTL metering 26
　Without TTL metering 27
INFRARED PHOTOGRAPHY 28
RECOMMENDED FOCUSING SCREENS 29
LENS CARE 30
SPECIFICATIONS 31
DEPTH-OF-FIELD TABLES . . . . . 32~33
CLOSE-UP TABLES . . . . . 34~35
FILTER TRANSMISSION CHART 36


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
Nikkor

NOMENCLATURE

1. Depth-of-field indicators
2. Aperture scale
3. Meter coupling shoe
4. Meter coupling ridge
5. Aperture-direct-readout scale
6. Infrared focusing index
7. Aperture indexing post
8. EE servo coupling post
9. Aperture ring
10. Mounting ring
11. Focusing ring screw
12. Filter holder ring UR-2
13. UV transmitting filter
14. Aperture/distance index
15. Distance scale
16. Reproduction ratio scale
17. Focusing ring
18. Gelatine filter holder AF-1
    (used as UV transmitting filter holder with this lens)

BEFORE USING THE LENS

Thank you for your kind patronage of Nikon. Before using your new lens, read the following carefully so you get the most out of your lens now and for years to come.

The UV-Nikkor 105mm f/4.5 is specially designed for UV (ultraviolet) photography, and with virtually no variation in the focus position between visible rays and UV rays, it eliminates clumsy focus adjustments.

Special coating is applied to the air-to-glass surface of the lens element to reduce reflection under UV rays.

At all focused distances in every wavelength range, aberration is minimal and distortion is eliminated.

Fluorspar is applied to some lens elements to ensure adequate transmission of UV rays.

Of course, ordinary photography can be performed in visible light.

UV PHOTOGRAPHY

Light Source

A considerable amount of UV radiation is required. **As UV rays can be harmful to the human body, however, avoid prolonged use of and direct viewing of UV light sources, and wear protective eyeglasses.**

Light sources for UV photography are:

1. Sunlight
2. Fluorescent blacklights
3. Mercury lamps
4. Xenon lamps
5. Special strobes and flashbulbs
6. Others

Filter

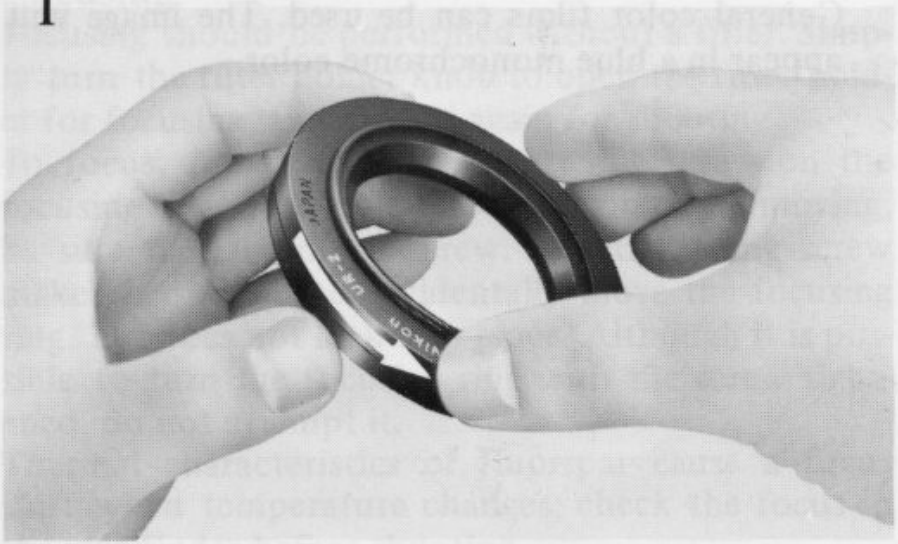
Use the supplied UV transmitting filter to eliminate visible and infrared rays. The UV transmitting filter has a transmission band centered on 330nm, and transmits UV rays at wavelengths from 220 to 420nm. (See chart on page 36.)

Filter attachment procedure is:

1. Unscrew the filter holder ring UR-2 to open the UR-2.
2. Put the filter on the one ring and screw the rings together.
3. Screw the assembly into filter holder AF-1.
4. Screw the AF-1 into the front of the lens until it clicks.

For ordinary color photography, use a 52mm screw-in type L37C or L39 filter to eliminate UV rays.

1



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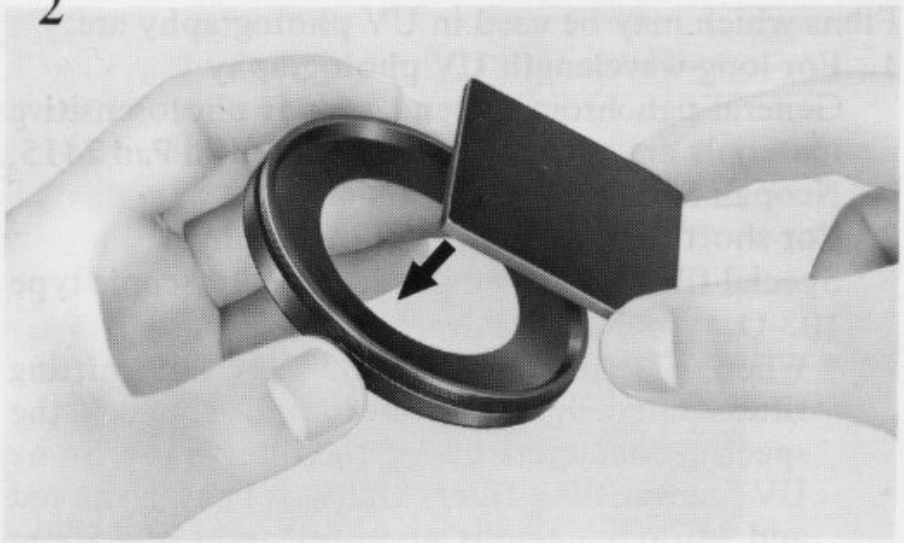


3

4

Photosensitive Materials

Films which may be used in UV photography are:

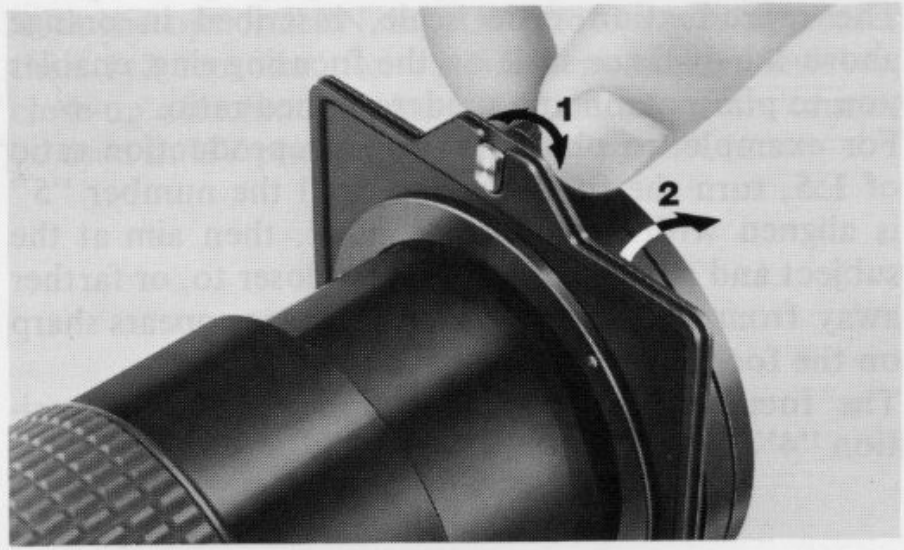
1. **For long-wavelength UV photography**
   General panchromatic and regular photosensitive materials are adequate: Tri-X, Technical Pan 2415, Neopan SS, Minicopy film, etc.
2. **For short-wavelength UV photography**
   Special film is required: Kodak Spectroscopic type 103-O, type 103-F, infrared film*, etc.
   * When using infrared film and a UV transmitting filter other than the one supplied, check the spectral characteristics of the filter in use. Some UV transmitting filters transmit light in the red and infrared regions at wavelengths of 650nm and longer, and may create overlapping images caused by unwanted wavelengths on the film.
3. **Color Film**
   General color films can be used. The image will appear in a blue monochrome color.

Focusing

Focusing should be performed without a filter. Simply turn the filter holder knob to open the filter holder for focusing, and close it again for shooting.

To focus, first loosen the tightening screw on the focusing ring. To keep the focusing ring from moving, be sure to tighten the screw. The tightening screw makes it difficult to accidentally move the focusing ring, but does not lock it in place. Although it is possible to turn the focusing ring with the screw tightened, do not attempt it.

Thermal characteristics of fluorspar cause a focus shift when temperature changes; check the focus in the viewfinder before shooting.

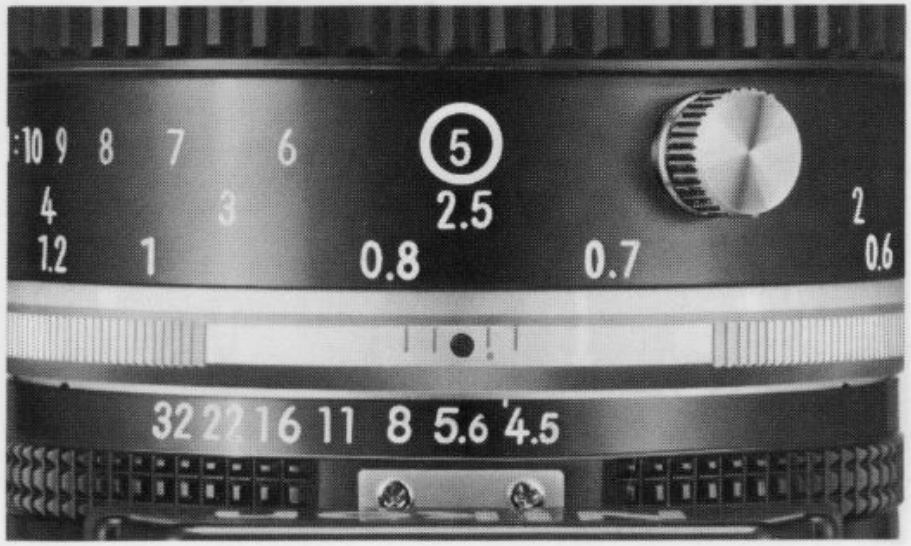


Focusing on predetermined reproduction ratio

The reproduction ratio scale, inscribed in orange above the distance scale on the focusing ring, enables you to photograph at a predetermined ratio.

For example, to photograph at a reproduction ratio of 1:5, turn the focusing ring until the number "5" is aligned with the distance index, then aim at the subject and adjust your position (closer to, or farther away from the subject) until the image appears sharp on the focusing screen.

The focusing ring tightening screw represents position "4", for one-fourth.



Depth of field

Depth of field can be checked with the color-coded depth-of-field indicators engraved on the lens barrel. The pairs of colored lines correspond to the f-numbers of the same color on the aperture scale. If your camera has a depth-of-field preview function, it is possible to check the depth of field in the viewfinder. (For details, see camera instruction manual).

Depth of field can also be checked by referring to the table on pages 32 and 33.

Exposure

Camera exposure meters cannot be used in UV photography—test shootings are required. The UV sensitivity of the film, the spectral energy distribution of the light source, the spectral transmissivity of the filters, the UV reflection ratio of the subject, etc., should all be considered.

An example of photographic data to take UV photographs of human skin

Light source	Blacklight (BLB) 40W × 4
Filter	UV transmitting filter supplied
Film	Tri-X (D-76, 20°, 7 min.)
Exposure	Approx. 1/125 sec. at f/5.6

UV photography at high magnification

With the optional PN ring, UV photographs at greater than 1:2 reproduction ratio are possible. However, close-up attachment lenses and teleconverters cannot be used in UV photography.

DETERMINING EXPOSURE IN VISIBLE LIGHT

With built-in TTL metering

Full-aperture exposure measurement can be performed. When used with a close-up attachment such as a PN ring or bellows, see the table at right.
When the lens is mounted in the reverse position, the stop down method should be used.

Camera	Close-up attachment	Exposure measurement
AI	PN-11	full-aperture
	PN-1*	stop-down
	Bellows/E2 and K rings/ close-up lenses	stop-down
Non-AI	PN-11	stop-down
	PN-1	full-aperture
	Bellows/E2 and K rings/ close-up lenses	stop-down

* Some AI camera bodies with fixed meter coupling lever will not accept the PN-1 ring.

Without TTL metering

At close range, the amount of light reaching the film decreases as the lens-to-film distance increases. When non-TTL measurement is used in such a case, make exposure compensation to prevent underexposure. The table at right gives exposure factors (compensation values) with corresponding expsoure increases in f/stops for non-TTL exposure measurement at reproduction ratios of 1:10 or greater.

When you want to limit the aperture compensation to one full f/stop or less, use slower shutter speeds. For example, for a 1:1.2 reproduction ratio, use a shutter speed one step slower and open the lens by 3/4 stop, or use a shutter speed two steps slower stop the lens down by 1/4 stop.

Reproduction ratio	Exposure factor	Exposure increase in f/stop
1:10	1.2	approx. 1/4
1:8	1.3	approx. 1/3
1:6	1.3	approx. 1/3
1:4	1.5	approx. 2/3
1:2	2.2	approx. 1¼
1:1.8*	2.3	approx. 1⅓
1:1.6*	2.5	approx. 1⅓
1:1.4*	2.8	approx. 1½
1:1.2*	3.2	approx. 1¾
1:1*	3.8	approx. 2

* with PN-11 ring

INFRARED PHOTOGRAPHY

In infrared photography, it is necessary to make the following adjustment to the focused distance.

1. Focus subject.
2. Reset the focusing ring to align the focused distance with the infrared focusing index.
3. Attach the appropriate optional filter, such as R60, etc., and take the shot.

RECOMMENDED FOCUSING SCREENS

Various interchangeable focusing screens are available for F3- and F2-series cameras to suit any type of lens or picture-taking situation. Those which are recommended for use with your lens are listed below. For screens used with Nikon cameras other than F3- and F2-series cameras (e.g., Nikon FA, FE2, FM2 and FE), refer to the column for F3-series cameras. For the K2, B2 and E2 focusing screens, refer to the columns on the K, B and E screens, respectively. For details, also refer to the specific focusing screen's instruction sheet.

Screen / Camera	A/L	B	C	D	E	G1	G2	G3	G4	H1	H2	H3	H4	J	K/P	M	R	T	U
F3	◎	◎		◎	◎			○	○			○	○	◎	◎		◎	◎	◎
F2	◎	◎		◎	◎			○	○			○	○	◎	◎		◎		

■ When the Teleconverter TC-14B or TC-14 is attached to this lens, use the following table*:

Screen / Camera	A/L	B	C	D	E	G1	G2	G3	G4	H1	H2	H3	H4	J	K/P	M	R	T	U
F3	●	◎		◎	◎									◎	●		●	●	●
F2	●	◎		◎	◎									◎	●		●		

■ When the Teleconverter TC-301 or TC-300 is attached to this lens, use the following table*:

Screen / Camera	A/L	B	C	D	E	G1	G2	G3	G4	H1	H2	H3	H4	J	K/P	M	R	T	U
F3	●	◎		◎	◎			○	○					◎	●		●	●	●
F2	●	◎		◎	◎			○	○					◎	●		●		

* Teleconverter cannot be used in UV photography.

◎ = Excellent focusing

● = Acceptable focusing
The image is brilliant from edge to edge, but the center area (range-finder, micro-prism or cross-hair) is dim. Focus on the surrounding matte area.

○ = Acceptable focusing
Slight vignetting (or moire phenomenon, in the case of the microprism) affects the screen image. The image on the film, however, shows no trace of this.

▩ = Exposure measurement not possible
Lens/screen combination permits only focusing operation.

Blank means inapplicable.

LENS CARE

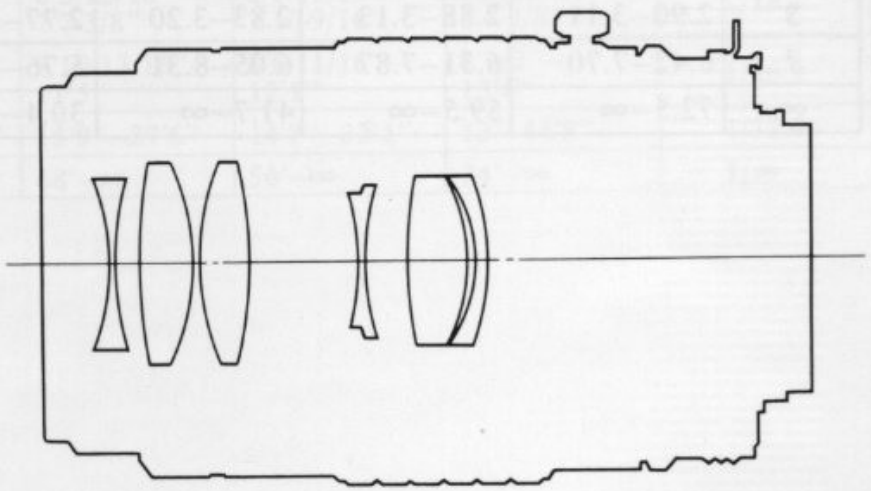
- Although you should always keep the lens surfaces clean, rough cleaning must be avoided. Wipe with a soft, clean cotton cloth moistened with alcohol to remove grease or fingerprints from the lens surfaces.
- Keep the lens cap in place whenever the lens is not in use.
- Attach both the front and rear caps when the lens is stored separately.
- To ensure proper fit of the lens when stored in the leather lens case, set the lens' focusing ring to the infinity (∞) setting.

SPECIFICATIONS

Focal length:	105mm
Maximum aperture:	f/4.5
Lens construction:	6 elements in 6 groups
Picture angle:	23°20′
Distance scale:	Graduated in meters and feet from 0.48m (1.57 ft.) to infinity (∞)
Aperture scale:	f/4.5 to f/32 on both standard and aperture-direct-readout scales
Reproduction ratio:	Scale provided; 1:10 to 1:2
Diaphragm:	Fully automatic
Exposure measurement:	Via full-aperture method; meter coupling ridge provided for AI cameras and meter coupling shoe for non AI cameras
Mount:	Nikon bayonet
Attachment size:	52mm (P = 0.75mm)
Dimensions:	Approx. 68.5mm dia. × 108mm when extended from lens mounting flange; approx. 116.5mm long (overall)
Weight:	Approx. 515g

Accessories
52mm snap-on front lens cap
Rear lens cap LF-1
Gelatine filter holder AF-1
Filter holder ring UR-2
52mm-square UV transmitting filter
52mm dia. screw-in filters
Hard lens case CL-15S
Flexible lens pouch No. 63
Plastic lens case CP-9
Teleconverter TC-14B*
Teleconverter TC-301*

* Cannot be used in UV photography.



被写界深度表／DEPTH-OF-FIELD TABLES

(m)

撮影距離 Focused distance	被写界深度 Depth of field							撮影倍率 Reproduction ratio
	f/4.5	f/5.6	f/8	f/11	f/16	f/22	f/32	
0.48	0.479–0.481	0.479–0.481	0.479–0.481	0.479–0.481	0.478–0.482	0.478–0.482	0.477–0.484	1/1.98
0.50	0.499–0.501	0.499–0.501	0.499–0.501	0.498–0.502	0.498–0.502	0.497–0.503	0.496–0.505	1/2.23
0.55	0.549–0.551	0.549–0.551	0.548–0.552	0.548–0.553	0.546–0.554	0.545–0.555	0.543–0.557	1/2.8
0.6	0.598–0.602	0.598–0.602	0.597–0.603	0.596–0.604	0.595–0.605	0.593–0.607	0.590–0.611	1/3.33
0.7	0.697–0.703	0.697–0.703	0.695–0.705	0.694–0.706	0.691–0.709	0.688–0.713	0.682–0.719	1/4.35
0.8	0.796–0.804	0.795–0.805	0.793–0.807	0.790–0.810	0.786–0.814	0.781–0.820	0.773–0.830	1/5.34
1	0.992–1.01	0.991–1.01	0.987–1.01	0.982–1.02	0.974–1.03	0.965–1.04	0.950–1.06	1/7.3
1.2	1.19–1.21	1.19–1.22	1.18–1.22	1.17–1.23	1.16–1.25	1.14–1.26	1.12–1.29	1/9.2
1.5	1.48–1.52	1.47–1.53	1.46–1.54	1.45–1.55	1.43–1.58	1.40–1.61	1.37–1.67	1/12.1
2	1.96–2.04	1.95–2.05	1.93–2.08	1.90–2.11	1.86–2.16	1.82–2.23	1.75–2.35	1/16.9
3	2.90–3.11	2.88–3.13	2.83–3.20	2.77–3.28	2.68–3.42	2.57–3.61	2.42–3.99	1/26.4
7	6.42–7.70	6.31–7.87	6.05–8.31	5.76–8.95	5.34–10.25	4.91–12.46	4.33–19.52	1/64.5
∞	72.5–∞	59.5–∞	41.7–∞	30.4–∞	21.0–∞	15.3–∞	10.6–∞	1/∞

(ft.)

Focused distance	Depth of field							Reproduction ratio
	f/4.5	f/5.6	f/8	f/11	f/16	f/22	f/32	
(1.57) 1.6	1'6-13/16"–1'6-13/16"	1'6-13/16"–1'6-13/16"	1'6-3/4"–1'6-13/16"	1'6-3/4"–1'6-7/8"	1'6-3/4"–1'6-7/8"	1'6-11/16"–1'6-7/8"	1'6-11/16"–1'6-15/16"	1/2.0
1.7	1'8-15/16"–1'9"	1'8-15/16"–1'9"	1'8-15/16"–1'9-1/16"	1'8-7/8"–1'9-1/16"	1'8-7/8"–1'9-1/8"	1'8-13/16"–1'9-1/8"	1'8-3/4"–1'9-1/4"	1/2.6
2.0	1'11-7/8"–2'1/16"	1'11-7/8"–2'1/16"	1'11-7/8"–2'1/16"	1'11-13/16"–2'1/8"	1'11-3/4"–2'3/16"	1'11-11/16"–2'1/4"	1'11-9/16"–2'7/16"	1/3.4
2.5	2'5-13/16"–2'6-1/8"	2'5-13/16"–2'6-1/8"	2'5-3/4"–2'6-3/16"	2'5-5/8"–2'6-5/16"	2'5-1/2"–2'6-7/16"	2'5-5/16"–2'6-5/8"	2'5-1/16"–2'6-15/16"	1/5.0
3.0	2'11-3/4"–3'3/16"	2'11-11/16"–3'1/4"	2'11-9/16"–3'3/8"	2'11-7/16"–3'9/16"	2'11-3/16"–3'13/16"	2'10-7/8"–3'1-1/8"	2'10-7/16"–3'1-11/16"	1/6.5
4.0	3'11-7/16"–4'1/2"	3'11-3/8"–4'5/8"	3'11-1/8"–4'7/8"	3'10-13/16"–4'1-1/4"	3'10-1/4"–4'1-13/16"–	3'9-11/16"–4'2-9/16"	3'8-3/4"–4'3-7/8"	1/9.4
5.0	4'11-1/8"–5'7/8"	4'10-15/16"–5'1-1/16"	4'10-1/2' –5'1-9/16"	4'9-15/16"–5'2-3/16"	4'9-1/16"–5'3-1/4"	4'8-1/16"–5'4-9/16"	4'6-1/2"–5'6-15/16"	1/12.3
7.0	6'10-1/16"–7'1-15/16"	6'9-11/16"–7'2-3/8"	6'8-3/4"–7'3-1/2"	6'7-5/8"–7'4-15/16"	6'5-13/16"–7'7-3/8"	6'3-11/16"–7'10-9/16"	6'9/16"–8'4-3/8"	1/18.2
10.0	9'7-7/8"–10'4"	9'7"–10'5"	9'5"–10'7"	9'2-5/8"–10'11"	8'10-13/16"–11'5"	8'6-11/16"–12'1"	8'1/2"–13'4"	1/26.9
20.0	18'6"–21'8"	18'3"–22'1"	17'7"–23'1"	16'10"–24'7"	15'9"–27'6"	14'7"–32'1"	13'–44'8"	1/55.9
∞	238'–∞	195'–∞	136'–∞	99'–∞	68'–∞	50'–∞	34'–∞	1/∞

接写表／CLOSE-UP TABLES

(cm)

	使用器具 Close-up attachment	レンズ正方向 Lens in normal position			レンズ逆向き Lens in reverse position		
		撮影倍率 Reproduction ratio	被写界面積 Subject field	撮影距離 Focused distance	撮影倍率 Reproduction ratio	被写界面積 Subject field	撮影距離 Focused distance
	クローズアップレンズNo.0 Close-Up Lens No. 0	1/14–1/1.7	32.8 × 49.2– 4.0 × 6.1	159–43.9	–	–	–
	クローズアップレンズNo.1 Close-Up Lens No. 1	1/6.5–1/1.4	15.5 × 23.2– 3.5 × 5.2	84.5–40.9	–	–	–
	クローズアップレンズNo.2 Close-Up Lens No. 2	1/3.2–1/1.1	7.8 × 11.6– 2.7 × 4.0	50.4–36.6	–	–	–
	クローズアップレンズNo.3T Close-Up Lens No. 3T	1/6.4–1/1.4	15.3 × 22.9– 3.4 × 5.1	82.9–40.5	–	–	–
	クローズアップレンズNo.4T Close-Up Lens No. 4T	1/3.3–1/1.1	7.8 × 11.7– 2.7 × 4.0	50.1–36.3	–	–	–
	EZリング E2 Ring	1/7.5–1/1.6	18.0 × 27.1– 3.8 × 5.7	102.3–45.1	–	–	–
*	Kリング K Ring Set	1/18.1–1/1.1	43.5 × 65.3– 2.5 × 3.8	213.2–42.9	–	–	–
**	PKリング PK-Series Rings	1/13.2–1.0	31.6 × 47.3– 2.5 × 3.7	161.0–42.9	–	–	–
	PNリング PN Ring	1/2.0–1.0	4.8 × 7.2– 2.4 × 3.6	48.1–42.9	–	–	–
	ベローズアタッチメントPB-4, PB-5 Bellows Focusing Attachment PB-4, PB-5	1/2.4–1.8	5.9 × 8.8– 1.4 × 2.0	51.9–46.3	1/3.5–1.6	8.3 × 12.5– 1.5 × 2.2	61.4–45.5
	ベローズアタッチメントPB-6 Bellows Focusing Attachment PB-6	1/2.2–2.0	5.3 × 7.9– 1.2 × 1.8	49.7–48.0	1/5.3–1/1.3	12.6 × 18.9– 3.1 × 4.6	79.2–43.5
	エクステンションベローズPB-6E Extension Bellows PB-6E	1/2.2–4.2	5.3 × 7.9– 0.58 × 0.86	49.7–68.2	1/5.3–3.0	12.6 × 18.9– 0.81 × 1.2	79.2–56.6
***	複写装置PF-2, PF-3, PF-4 Reprocopy Outfit PF-2, PF-3, PF-4	1/5.9–1/2	14.1 × 21.1– 4.8 × 7.2	85.3–48.0	–	–	–

＊Kリングのはじめの数値はKリング1個使用のとき、あとの数値はK1～K5リングを連結したときのものです。

＊＊PKリングのはじめの数値はPK-1リングまたはPK-11リング1個使用のとき、あとの数値はPK-1～PK-3またはPK-11～PK-13リングを連結したときのものです。

＊＊＊複写装置PF-2、PF-3、PF-4はレンズ単体で使用したとき、複写台の載物面上の撮影可能範囲を示します。

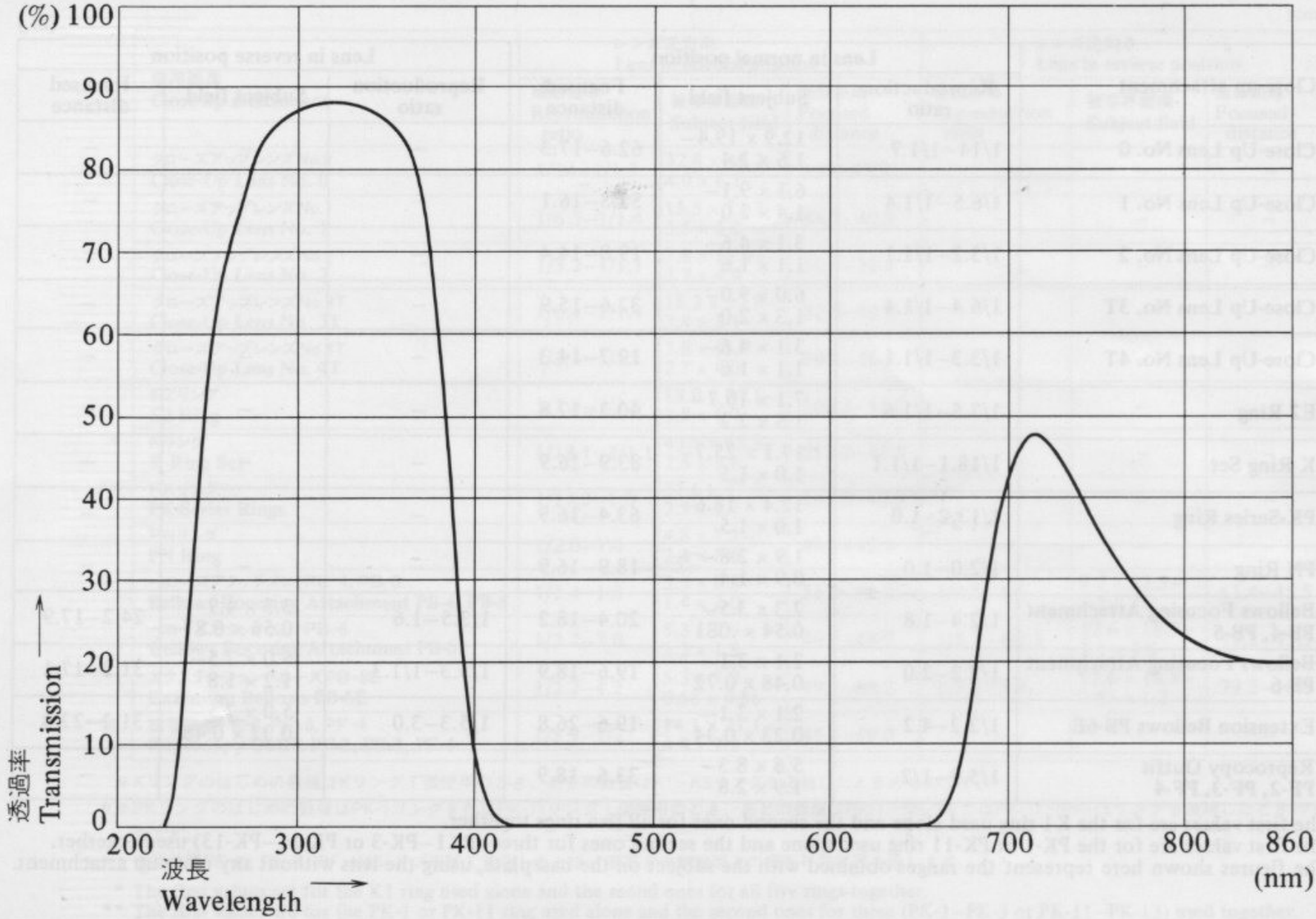
* The first values are for the K1 ring used alone and the seond ones for all five rings together.
** The first values are for the PK-1 or PK-11 ring used alone and the second ones for three (PK-1–PK-3 or PK-11–PK-13) used together.
*** The figures shown here represent the ranges obtained with the subject on the baseplate, using the lens without any close-up attachment.

(in.)

	Close-up attachment	Lens in normal position			Lens in reverse position		
		Reproduction ratio	Subject field	Focused distance	Reproduction ratio	Subject field	Focused distance
	Close-Up Lens No. 0	1/14–1/1.7	12.9 × 19.4–1.6 × 2.4	62.6–17.3	–	–	–
	Close-Up Lens No. 1	1/6.5–1/1.4	6.1 × 9.1–1.4 × 2.0	33.3–16.1	–	–	–
	Close-Up Lens No. 2	1/3.2–1/1.1	3.1 × 4.6–1.1 × 1.6	19.8–14.4	–	–	–
	Close-Up Lens No. 3T	1/6.4–1/1.4	6.0 × 9.0–1.3 × 2.0	32.6–15.9	–	–	–
	Close-Up Lens No. 4T	1/3.3–1/1.1	3.1 × 4.6–1.1 × 1.6	19.7–14.3	–	–	–
	E2 Ring	1/7.5–1/1.6	7.1 × 10.7–1.5 × 2.2	40.3–17.8	–	–	–
*	K Ring Set	1/18.1–1/1.1	17.1 × 25.7–1.0 × 1.5	83.9–16.9	–	–	–
**	PK-Series Ring	1/13.2–1.0	12.4 × 18.6–1.0 × 1.5	63.4–16.9	–	–	–
	PN Ring	1/2.0–1.0	1.9 × 2.8–0.9 × 1.4	18.9–16.9	–	–	–
	Bellows Focusing Attachment PB-4, PB-5	1/2.4–1.8	2.3 × 3.5–0.54 × .081	20.4–18.2	1/3.5–1.6	3.3 × 4.9–0.58 × 0.87	24.2–17.9
	Bellows Focusing Attachment PB-6	1/2.2–2.0	2.1 × 3.1–0.48 × 0.72	19.6–18.9	1/5.3–1/1.3	5.0 × 7.5–1.2 × 1.8	31.2–17.1
	Extension Bellows PB-6E	1/2.2–4.2	2.1 × 3.1–0.23 × 0.34	19.6–26.8	1/5.3–3.0	5.0 × 7.5–0.32 × 0.48	31.2–22.3
***	Reprocopy Outfit PF-2, PF-3, PF-4	1/5.9–1/2	5.6 × 8.3–1.9 × 2.8	33.6–18.9	–	–	–

* The first values are for the K1 ring used alone and the second ones for all five rings together.
** The first values are for the PK-1 or PK-11 ring used alone and the second ones for three (PK1–PK-3 or PK-11–PK-13) used together.
*** The figures shown here represent the ranges obtained with the subject on the baseplate, using the lens without any close-up attachment.

付属フィルターの分光透過曲線図／FILTER TRANSMISSION CHART



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