



TOPCON
U NIREX
EE

The logo is presented on a black diamond-shaped background. This diamond is set against a light gray background and is framed by four blue triangular sections at its corners. The text is in a bold, white, sans-serif font. The 'U' is particularly large and stylized, with the letters 'NIREX' following it. Below this, the letters 'EE' are centered.



Congratulations on your choice of the TOPCON Unirex EE camera which will bring you complete enjoyment of photography because of the simplicity with which pictures can be taken at all times and under all conditions, with complete exposure automation, by simply setting the camera to AUTO.

Complete exposure automation and thru-the-lens metering are possible with all UV Topcor lenses so that "fun" photography is even extended to wide-angle and telephoto shooting.

But, at the same time, there is also manual override of the exposure automation system so that you are always free to revert to manual exposure settings for special effects, whenever you are inclined to do so.

Although operation is very simple, may we suggest that you read instructions through once before you even touch the camera. Thoroughly familiarize yourself with the working parts (so that you fingers work the camera automatically) before you even load your first roll of film. Your pleasure in using the TOPCON Unirex EE will even be greater if you know your camera thoroughly.

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IMPORTANT

1. The battery must be inserted into the camera before the exposure meter will work.
2. Don't touch the surfaces of the lens, mirror and eyepiece.
3. Always stroke the film winding lever all the way—until it makes a full stop.
4. Wait until the shutter action is completed before stroking the film winding lever (especially at slow shutter speeds).
5. Cover the lens when not in use.
6. Don't force movements but re-read instructions once more.
7. Contact the nearest authorized dealer, if repair is required. Don't ever do it yourself.

Inserting the Battery



1. The battery is taken out of the camera for shipment to you.
It must, therefore, be inserted into its compartment before the exposure system will work. Unscrew the battery compartment cover and insert the battery supplied with the camera.



2. Place the battery in the compartment with the plus (+) side facing outwards, as otherwise the meter system will be short-circuited. Replace the cover when the battery is correctly inserted.

SPECIFICATIONS

- Standard Lens : 50mm f/2.8 UV Topcor 4 element lens.
47° field of view; f/2.8 to f/22; minimum focus 80 cm. (3 ft.); 49 mm screw-in filter mount.
- Shutter : $\frac{1}{100}$ Seiko SLV-G behind-lens type leaf shutter. Ten shutter speed settings 1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250 and 1/500 sec., plus Bulb. Flash synchronization on M and X settings. Self-timer on V setting.
- Finder : Fixed eye-level Pentaprism finder, with 0.82 $\times$ image (with the standard lens) and 33.5 mm $\times$ 22.3 mm finder screen (93% of the width and length of the actual picture area). Microprism focusing spot surrounded by fine focus ring and full area groundglass, with TOKOBRITE fresnel lens plate.
- Lens Mount : TOPCON UNI mount, compatible with lenses for the TOPCON UNI and TOPCON Unirex.
- Exposure Meter : Thru-the-lens center-weighted full aperture measuring system, with two CdS cells on both sides of the finder eyepiece measuring the reflected light at the finder screen and giving an average reading for the full area. Exposure range is EV 6 to EV 18, with ASA 100 film and 50 mm f/2 lens.
- Meter Coupling : Electric-Eye (EE) exposure automation on AUTO setting, with shutter speeds 1/15 to 1/500 sec., apertures f/2.8 to f/22 (with ASA 100 film) and film speeds ASA 25 to 1000 (DIN 15 to 33).
Complete freedom in aperture/shutter speed settings with manual override.
- Mirror Action : Quick-return mirror action, with skirted film blind also folding and unfolding in coordinated action.
- Flash Synchronization : Class M flash bulbs synch at all shutter speeds from 1 to 1/500 sec., on M-setting.

Electronic flash units synch at all shutter speeds, too, on X-setting.
Class F flash bulbs synch at shutter speeds 1 to 1/125 sec. on X-setting.

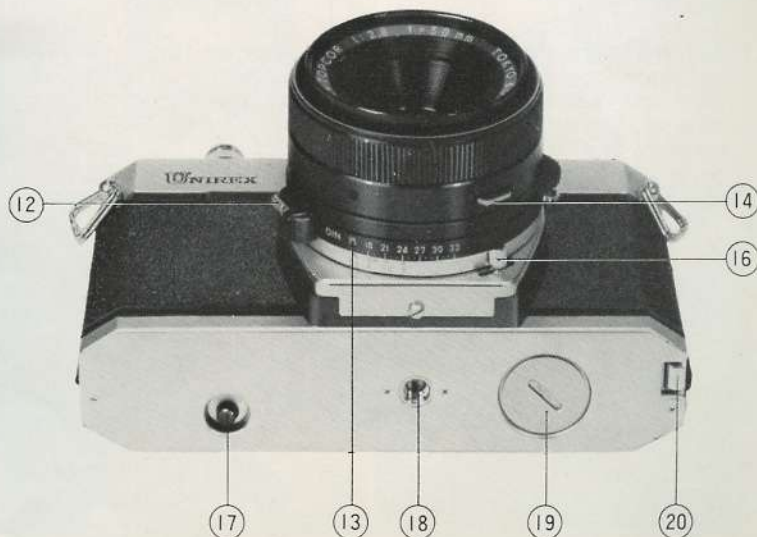
- Film Winding Action : 180° single stroke advances film, charges shutter and mirror raising mechanism, as well as advancing exposure counter.
- Exposure Counter : Exposure counter automatically returns to start-mark (S) upon opening camera back and shows the number of exposures made. Red-colored 1st frame dot, 20th frame numeral and 36th frame dot.
- Film Speed Indicator : Nineteen click-stopping ASA and DIN film speeds on the lens barrel, with film speed adjustment catch pulled out for making adjustments. ASA speeds are 25, (32), (40), 50, (64), (80), 100, (125), (160), 200, (250), (320), 400, (500), (650), 800, (1000), (1250) and 1600. DIN speeds are 15, (16), (17), 18, (19), (20), 21, (22), (23), 24, (25), (26), 27, (28), (29), 30, (31), (32) and 33. Numbers in brackets () are represented by dots.
Has film speed compensation indexes for use with interchangeable lenses, or 2.8, (3.5), 4 and 5.6, for use with lenses of these maximum apertures.
- Film Loading : Hinged camera back locks tight on safety catch when closed strongly. Opens when back cover catch is pulled down. Multi-slot take-up spool for easy loading.
- Film Rewinding : Rewind crank is flipped open for fast rewinding action. Rewind button automatically pops up with film winding lever action.
- Shutter Release : Shutter release button is located on top right deck and has a cable release socket.

NOMENCLATURE

- ① Film winding lever
- ② Shutter release button (with cable release socket)
- ③ Exposure counter
- ④ Accessory shoe
- ⑤ Film plane indicator
- ⑥ Rewind knob
- ⑦ Shutter speed ring
- ⑧ Aperture ring
- ⑨ Depth of field scale
- ⑩ Distance focusing ring
- ⑪ Flash socket



- ⑫ Film speed adjustment catch
- ⑬ DIN film speed scale
- ⑭ Lens locking lever
- ⑮ ASA film speed scale
- ⑯ MXV-switch
- ⑰ Rewind button
- ⑱ Tripod socket
- ⑲ Battery cover
- ⑳ Rear cover catch

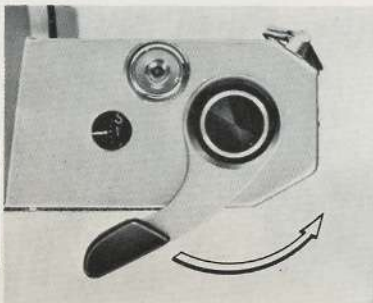
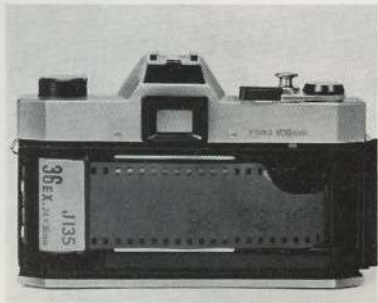


Quick Guide to the Unirex EE

Taking pictures with the TOPCON Unirex EE is very simple, especially if you have had some experience with cameras.

If this is your first camera, however, detailed explanations on how to handle the Unirex EE also follow. Therefore, we would suggest that this manual be read through carefully before making a practice run with the camera.

1. Pull the back cover lock and open the back cover. Load the camera with a 35 mm film in daylight cartridge and push the back cover close.
2. Advance the film to the first frame, as shown by the exposure counter.
3. Set the ASA or DIN film speed to the film speed index corresponding to the maximum aperture of the lens on the camera.



4. Set the shutter speed ring to one of the red-colored shutter speeds and the aperture ring to AUTO.



5. Compose and focus the picture in the finder.



6. Check the aperture scale in the finder. The exposure needle should not be in the red (and orange) warning areas.



7. Press the shutter release button softly if everything is satisfactory.

8. Upon exposing all frames, rewind the film back into the original cartridge with the rewind crank.

9. Open the back cover and unload the film, by pulling the rewind knob up.

Film Loading

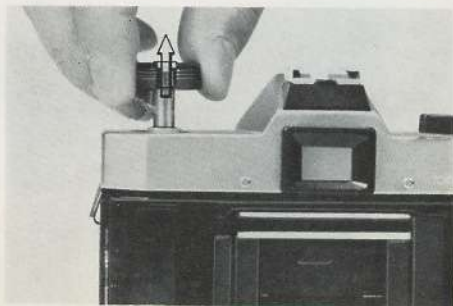
Use 35 mm film in daylight cartridges and load and unload film away from direct sunlight or strong artificial illumination.

Black-and-white films are available in both 20 and 36 exposure lengths while color films are available in 12, 20 and 36 exposure lengths. Frame size for both is 24 mm×36 mm.

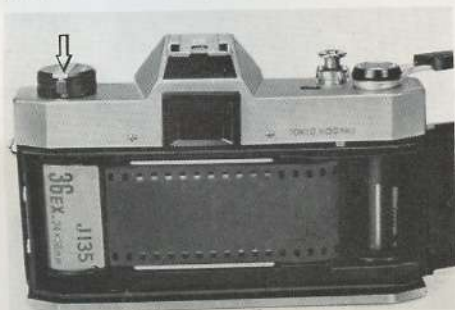
1. Pull the back cover lock down and the back cover will spring open. Open it all the way to expose the film chamber.



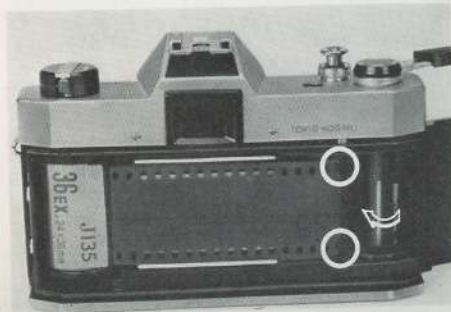
2. Pull the rewind knob up, as far as it will go.



3. Place the film cartridge in the film chamber and push the rewind knob back into position. If it does not go in fully, revolve slightly, so that the rewind knob shaft engages the film cartridge. Insert the leading end of the film into the multi-slot take-up spool.



4. Advance the film winding lever slowly until the film perforations engage the film transport sprocket teeth, at the top and bottom. Close the back cover firmly so that it snaps shut with a clicking sound.



5. Rotate the rewind knob in the arrow-indicated direction to tension the film inside the cartridge. Film winding action will then rotate the knob in the opposite direction, showing that the film is actually being advanced.



6. Stroke the film winding lever with the right thumb 180° or until it makes a full stop. There is a play of 20° in the lever for inserting the right thumb to permit immediate winding action after shutter release.



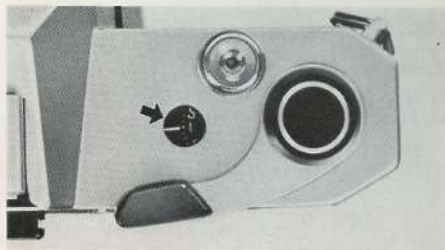
Film Winding Lever Action

Each time the film winding lever is stroked 180°, the following actions take place:—

- (1) The film is advanced one frame.
- (2) The exposure counter is also advanced one frame.
- (3) The shutter is charged.
- (4) The automatic lens diaphragm mechanism is charged.

Exposure Counter

7. After stroking the film winding lever, press the shutter release button. Repeat two times more and the exposure counter will be on "1" for the first shot. The counter shows the number of frames exposed and automatically returns to "S", when the back cover is opened.



Film Speed Indicator

8. Pull the film speed adjustment catch outwards which will free the film speed scale and let you set the camera for the film sensitivity of the film loaded in the camera.



9. Revolve the free-moving film speed scale ring to set the required ASA or DIN speed to one of the five red-colored speed indexes, or 2, 2.8, (3.5, represented by the dot), 4 and 5.6, which are for use with lenses of these maximum apertures.



Holding the Camera

1. Horizontal format: Grip the focusing ring with the left thumb and index finger and support the camera on the left palm. Place the right thumb against the film winding lever and wrap the other fingers around the body so that the index finger is on the shutter release button. Use the right eye for view-focusing.
2. Vertical format: Without any change in the basic holding position noted, turn the camera around until the film winding lever is on top. In both cases, press the camera against the face and both elbows (when possible) against the body, for steadying the camera.
3. Use props, like desk, chair, tree, etc., to support or steady the camera, whenever possible.
4. Tripod: Use the tripod, at slow shutter speeds or with the telephoto lens, if conditions permit. Screw a cable release into the socket of the shutter release button to release the shutter, in this case, as it will eliminate camera vibration, or use the self-timer for the same purpose.



View-Focusing

1. The Pentaprism finder shows an erect image moving in the same direction as the subject and the area in the finder is the area which will be covered in color slides.
2. The image will be seen indistinct and blurred in the microprism focusing spot, as well as in the surrounding fine focus ring and groundglass area, when the subject is not in focus.
3. When the subject is properly focused, the microprism spot, as well as fine focus ring and groundglass area, will show a bright and distinct image. Focusing is particularly fast because the whole finder area is used for this purpose.
4. The subject is focused by rotating the distance focusing ring in either direction until the image is seen distinctly and sharply. The focused distance can be found opposite the distance index.



Automatic Exposure Settings

Correct exposure is the relationship between shutter speed and lens opening, as decided by the brightness of the subject and is dependent on the film speed. It is one of the most important factors for taking better pictures and also one of the most difficult adjustments to make, without prior experience.

Film speed is predetermined by the film loaded and shutter speed is, more or less, determined by the action of the subject or the overall brightness. Therefore, the most important factor is the ability to judge the brightness of the subject and set correct exposures based on such a judgement, which are both taken care of automatically when the TOPCON Unirex EE is set on AUTO.

1. Revolve the shutter speed ring and set one of the red-colored shutter speeds to the index.

Choose your shutter speed for the overall brightness or the action of the subject. Generally, if you keep your camera set to 1/125 sec., you will be prepared for most outdoor situations, when using ASA 100 film.

2. Set the aperture ring to AUTO.



3. Check the aperture scale in the finder field. The exposure needle should not be in the red warning areas (as well as orange area when using $f/3.5$ and $f/4$ lenses). Check because the shutter can be released in spite of the needle position.



4. Press the shutter release button smoothly and gently. Do not jerk or press too strongly, as there will be camera shake. Wait until the shutter action is completed before advancing the film, especially at slow shutter speeds.



Shutter Action

All UV Topcor lenses have fully automatic lens diaphragm mechanism which means that you can view-focus at full aperture and the lens diaphragm will automatically close down to the required aperture, upon shutter release, and then reopen back to the maximum opening.

In other words, pressing the shutter release button means that the—

- (1) Shutter blades close down completely.
- (2) Reflex mirror rises, with its skirted film blind folding up, too, and the lens diaphragm stops down to the required lens opening.
- (3) Shutter blades open and close (taking the picture).
- (4) Mirror swings down to the reflex viewing position, with its skirted film blind also unfolding, and the lens diaphragm opens up fully.
- (5) Shutter blades open up fully.



SHUTTER SPEED GUIDE

Lighting \ Film Speed (ASA) (DIN)	25 15/10	32 16/10	50 18/10	100 21/10	200 24/10	400 27/10	800 30/10	1600 33/10
Bright Sun on Sand or Snow	1/125	1/125	1/250	1/500	1/500	1/500	—	—
Bright Sun Strong Shadows	1/125	1/125	1/125	1/250	1/250	1/500	1/500	—
Hazy Sun Weak Shadows	1/125	1/125	1/125	1/125	1/250	1/250	1/500	1/500
Cloudy Bright No Shadows	1/60	1/60	1/60	1/60	1/60	1/125	1/125	1/250
Open Shade Under Clear Blue Sky	1/60	1/60	1/60	1/60	1/60	1/125	1/125	1/250
Cloudy Rain	1/30	1/30	1/30	1/30	1/30	1/60	1/125	1/125

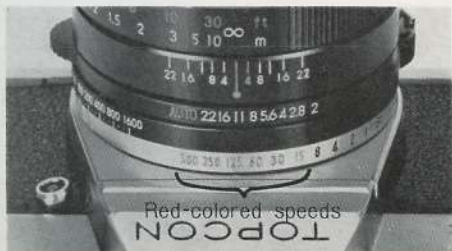
Manual Exposure Settings

The exposure automation system of the Unirex EE can be overridden so that exposure settings can be set freely, either based on a reading obtained with the built-in exposure meter or by other methods.

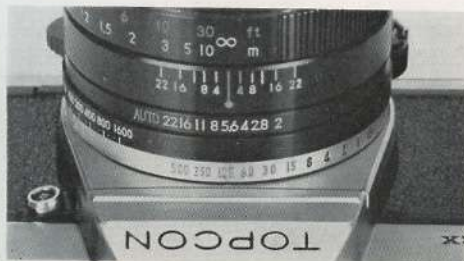
The built-in exposure meter can be used for taking exposure readings at shutter speeds 1/500 to 1/15 sec. At slower shutter speeds from 1/8 to 1 sec., and B (bulb), the built-in meter cannot be used for such purpose.

Manual exposure settings will be necessary when the subject or point of interest is not in the center of the area to be photographed, or has too much contrast, or if a certain mood is desired or if some other artistic effect is required in the final picture.

1. Set the shutter speed ring to one of the red-colored shutter speeds but move the aperture ring off AUTO.
2. Point the camera lens at the subject or point of interest and read the aperture setting indicated on the aperture scale in the finder. If the exposure needle is in the warning area, shift the shutter speed within the red-colored settings.



3. Transfer the indicated aperture setting to the aperture ring, so that it is opposite the aperture index. Modify the setting if some special effect is desired.



4. Or, set any shutter speed that you consider appropriate for the subject, including slow shutter speeds from 1/8 to 1 sec., or even B.
5. Then, set any f/number considered suitable for the exposure, based on the exposure chart included with the film, previous experience, etc.



Shutter Speeds

Full numbers are engraved on the shutter speed ring, from 1 to 500, as well as B. The numbers represent the shutter speeds or, in other words, 500 is 1/500 sec. and 1 is 1 sec. B is for bulb and the shutter will stay open as long as the release button is depressed, in this case. Larger numbers are, therefore, faster than smaller numbers and each larger number keeps the shutter open for 1/2 as long as the next number.

Choice of shutter speed is not only dependent on lighting conditions but also on the need for stopping action, or—

- (1) A faster speed is required for a speedier object.
- (2) A faster speed is needed for movement nearer the camera.
- (3) A faster speed is required for a subject moving parallel to the camera, while a slower speed may be used for movement towards or away from the camera.
- (4) The degree of stopping, or “freezing”, the action will also determine the speed to be used.

Lens Openings

The lens opening controls the amount of light that passes through the lens to the film plane, while the shutter is opened. The apertures or lens openings, called f/numbers, also, have exposure ratios as noted following:—

Aperture (F) Number	2.8	4	5.6	8	11	16	22
Exposure Ratio	1/2	1	2	4	8	15	30



As can be seen, the larger numbers on the aperture ring are the smaller lens openings and permit only 1/2 the amount of light of the next smaller number.

IMPORTANT

1. For setting a slower shutter speed than $1/15$ sec., use the aperture reading obtained with the built-in exposure meter for $1/15$ sec. However, readjust it by stopping down the lens opening by the same number of steps as the exposure time is increased, in the following manner :—

Shutter speed : $1/15-1/8-1/4-1/2-1$

Aperture : 4 —5.6— 8 —11—22

2. The exposure reading can be unsuitable even when the exposure needle is not in the warning areas, when using films other than ASA 100 and ASA 200. This is so when a fast film is used at a slow shutter speed or a slow film is used at a fast shutter speed. Specifically, the following combinations should not be used :—

f/2.8 and $1/125$ sec. for ASA 1600 film

f/2.8 and $1/60$ sec. for ASA 800 film

f/2.8 and $1/30$ sec. for ASA 400 film

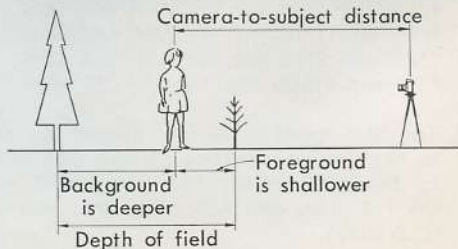
f/2.8 and $1/15$ sec. for ASA 200 film

f/22 and $1/500$ sec. for ASA 25 film

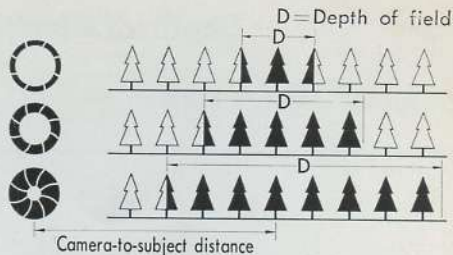
3. The film speed scale ring cannot be rotated to set film sensitivities of ASA 500 and over to the f/5.6 index, ASA 1000 and over to the f/4 index and ASA 1250 and over to the f/3.5 index.

Depth of Field

1. When the maximum aperture is used for taking the picture, it will be seen that objects before and behind the main subject (or focused plane) will not be seen as sharply focused as the main subject.
2. When a smaller lens opening is used, however, for taking the same picture, it will be seen that some objects before and behind the main point of interest are also seen sharply. This zone of "apparent" sharpness is the depth of field.
3. The depth of field is greater behind the focused subject and shallower before but grows progressively equal as the focusing distance grows shorter. The depth of field also grows greater as the focused distance is increased and less as the camera-to-subject distance is decreased. The depth of field also increases when the wide-angle lens is used and decreases when the telephoto lens is used.



4. The depth of field is greater as the aperture is closed down and less as the diaphragm is opened up. Thus, the wide-open aperture of the fully automatic lens always shows the least depth of field and is valuable for precise focusing.



5. The depth of field scale is used for a quick check of the depth of field.

For example, if the lens opening is $f/11$ with a focused distance of 10 m (30 ft.), the distances opposite $f/11$ on both sides of the scale will show that the depth of field is from about 4 m (13 ft.), to infinity. Should an aperture of $f/16$ be used, however, the zone will be seen to extend from about 3 m (10.5 ft.) to infinity.



6. Or, the scale may also be used for covering two subjects at different distances. If the near subject is 2 m (7 ft.) and the farther 8 m (27 ft.), revolve the distance focusing ring until these distances are opposite identical apertures (about $f/16$, in this case) and use this lens opening.



7. The distance to the subject is measured from the focal or film plane mark on the camera's top deck.

Depth of Field Table (distances in meters)

UV Topcor 50 mm F.28

1/30 mm

APERTURE DISTANCE	2.8	4	5.6	8	11	16	22
∞	$\infty \sim 27.7$	$\infty \sim 20.1$	$\infty \sim 14.2$	$\infty \sim 10.1$	$\infty \sim 7.16$	$\infty \sim 5.09$	$\infty \sim 3.63$
10	15.6~7.38	19.9~6.71	33.7~5.91	$\infty \sim 5.06$	$\infty \sim 4.21$	$\infty \sim 3.41$	$\infty \sim 2.69$
5	6.07~4.25	6.62~4.03	7.66~3.73	9.85~3.37	16.6~2.98	$\infty \sim 2.56$	$\infty \sim 2.14$
3	3.35~2.72	3.51~2.63	3.77~2.50	4.22~2.34	5.10~2.14	7.24~1.92	18.3~1.68
2	2.15~1.88	2.21~1.83	2.31~1.77	2.47~1.69	2.73~1.59	3.23~1.47	4.39~1.32
1.5	1.58~1.43	1.61~1.41	1.66~1.37	1.74~1.32	1.87~1.26	2.08~1.18	2.49~1.09
1.2	1.25~1.16	1.27~1.14	1.30~1.12	1.35~1.09	1.42~1.05	1.54~0.99	1.74~0.93
1.0	1.04~0.97	1.05~0.96	1.07~0.95	1.10~0.92	1.15~0.89	1.22~0.86	1.34~0.81
0.8	0.82~0.78	0.83~0.78	0.84~0.77	0.86~0.75	0.89~0.74	0.93~0.71	1.00~0.68

Depth of Field Table (distances in feet)

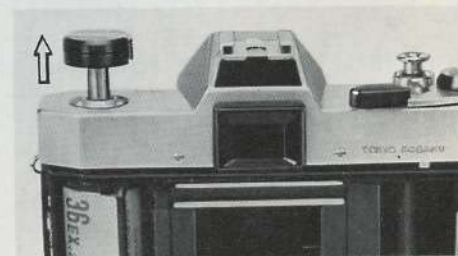
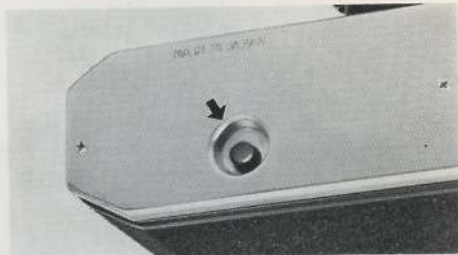
UV Topcor 50 mm F2.8

1/30 mm

APERTURE DISTANCE	2.8	4	5.6	8	11	16	22
∞	$\infty \sim 91.0$	$\infty \sim 65.8$	$\infty \sim 46.7$	$\infty \sim 33.1$	$\infty \sim 23.5$	$\infty \sim 16.7$	$\infty \sim 11.9$
30	44.6 ~ 22.6	54.9 ~ 20.7	83.9 ~ 18.4	33.9 ~ 15.8	$\infty \sim 13.3$	$\infty \sim 10.8$	$\infty \sim 8.62$
10	11.2 ~ 9.05	11.7 ~ 8.74	12.6 ~ 8.30	14.2 ~ 7.76	17.2 ~ 7.11	24.7 ~ 6.37	66.6 ~ 5.55
6	6.40 ~ 5.66	6.56 ~ 5.54	6.83 ~ 5.37	7.25 ~ 5.14	7.94 ~ 4.86	9.18 ~ 4.51	11.9 ~ 4.10
4	4.17 ~ 3.86	4.24 ~ 3.80	4.34 ~ 3.72	4.50 ~ 3.62	4.75 ~ 3.48	5.15 ~ 3.31	5.86 ~ 3.09
3	3.10 ~ 2.93	3.13 ~ 2.90	3.19 ~ 2.85	3.27 ~ 2.79	3.39 ~ 2.72	3.58 ~ 2.61	3.90 ~ 2.48

Film Unloading

1. If the winding lever does not move easily, check the exposure counter. If it shows that the last exposure has been taken, do not advance the film any more or you will tear it out of its cartridge.
2. Depress the rewind button.
3. Unfold the rewind crank and revolve in the arrow-indicated direction.
Rewind smoothly and evenly because erratic or very fast rewinding may cause static electricity marks on the film.
Rewind until tension lessens, as the film slips out of the take-up spool, and then stop. Do not rewind the leading end back into the cartridge.
4. Open the back cover, pull up the rewind knob and let the film cartridge fall out.
Bend the leading end of the film, as a sign that the film has been exposed, and return it to its original package until development.



Self-Timer

Shift the MXV-switch to V-setting, to use the self-timer.

Press the shutter release button and, after a 10 second delay, the actual shutter release will take place, letting the photographer get into the picture, also.

Exposure automation is possible, on AUTO, with the self-timer. Flash synchronization takes place on X-setting with the self-timer.



Infrared Index

The infrared index is the red line on the depth of field scale. When using infrared film, focus in the regular manner (say, the distance is 10 m (30 ft.)), and then shift the distance obtained to the index, as shown.

The invisible infrared wave lengths are longer than the visible wave lengths used for focusing, thus requiring such adjustments. Follow instructions enclosed with the film for filter and exposure.



Lens Exchange

Six lenses, are available for the TOPCON Unirex EE and may be used interchangeably. An exclusive bayonet mount permits simple, accurate and speedy exchange of the complete lens.

All UV Topcor lenses have a special coating for cutting ultra-violet (UV) rays and thus give breath-taking true-to-life color renditions of outdoor scenes and eliminate the need for a UV filter outdoors in black-and-white work.

All UV Topcor lenses have fully automatic instant reopening lens diaphragm action and are coupled for complete electric-eye (EE) exposure automation and quick-as-a-wink mirror action. upon attachment to the camera.

Use the front lens cap to protect the front lens element and the rear lens cap, for protecting the rear lens element, when the lens is not being used and/or when it is detached from the camera.



1. To remove the lens from the camera body, press the lens locking lever, which will disengage the lens locking system. Rotate the lens counter-clockwise until it stops and lift it out gently.



2. To attach the lens to the camera body, line up the red aperture index dot with the red dot on the rim of the body mount and insert the lens carefully. When well-seated, revolve clockwise until it stops and clicks into position.



UV TOPCOR	Number of Elements	Angle of Field	Exposure Measurement	Diaphragm Control	Minimum Focusing Distance	Lens Hood Mount	Filter Mount	Net Weight
28mm f/4	6	75°	Full-Aperture	Automatic	0.4m (15in.)	Screw-in	49mm	170g.
35mm f/3.5	6	63°	Full-Aperture	Automatic	0.4m (15in.)	Screw-in	49mm	160g.
50mm f/2.8	4	47°	Full-Aperture	Automatic	0.8m (3ft.)	Screw-in	49mm	114g.
100mm f/4	5	24°	Full-Aperture	Automatic	1.5m (5ft.)	Screw-in	49mm	220g.
135mm f/4	5	18°	Full-Aperture	Automatic	1.8m (6ft.)	Built-in	49mm	305g.
200mm f/4	6	12°	Full-Aperture	Automatic	6m (20ft.)	Built-in	67mm	520g.

£51

£36

£36

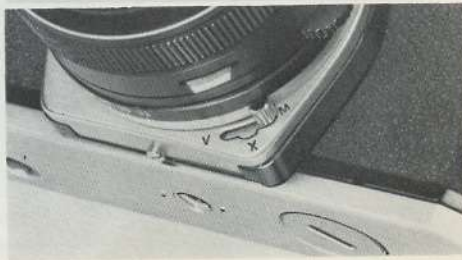
£51

£65

Flash Photography

Flash illumination can be used when available light is not sufficient for taking pictures at the desired speed or aperture, for filling in shadows or when there is hardly any light at all.

1. Simply mount the TOPCON Flash Gun, Model 1, in the accessory shoe and insert the flash cord plug into the flash socket for flash photography with Class M and F flash bulbs.
2. A lightweight electronic flash unit can also be used in the accessory shoe, with the connector cord plug also inserted into the flash socket. Larger units should be used with brackets, fixed to the bottom of the camera with the fixing screw. Electronic flash units are suitable for those who require flash illumination quite often.
3. For using Class M flash bulbs, shift the MXV-switch to M-setting.
Class M bulbs can be used at all shutter speeds up to 1/500 sec. Small miniature bulbs and all glass no-base bulbs are available in this class and give great light output in spite of their very small size.



4. For using Class F bulbs and electronic flash units, shift the MXV-switch to X-setting.

Electronic flash units can also be used at all speeds up to 1/500 sec. Light intensity is not great but speed is 1/1000 sec., or even faster, thus stopping most actions.

5. The camera will not work on AUTO, in flash photography.

Determine the aperture from the guide number for the flash bulb (see instructions enclosed with bulb), as in the formula

With a guide number of 50 and a flash-to-subject distance of 3 meters, the aperture will be f/16 for a room of average brightness or size.

Adjust for a larger or brighter room.



Shutter Speeds for Flash Photography

Class	X-Setting	M-Setting
F	1—1/125sec.	
M		1—1/500sec.
S		1—1/30 sec.
Electronic Flash	1—1/500sec.	

$$\frac{\text{Guide Number}}{\text{Flash-to-Subject Distance}} = \text{Aperture}$$

Accessories

1. Filters for Black-and-White Films

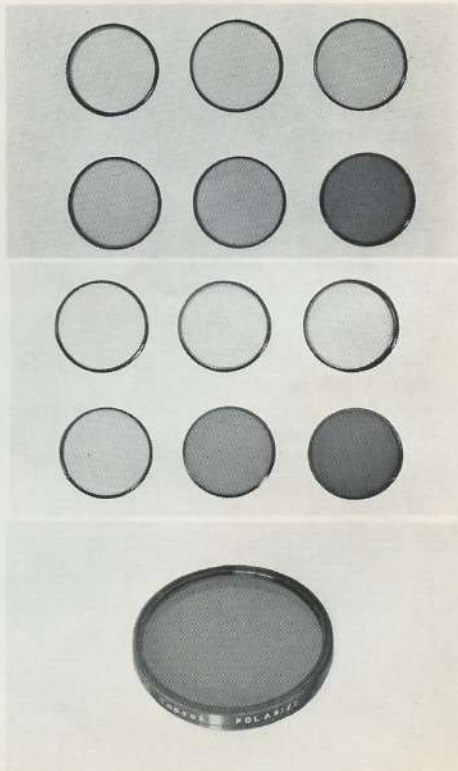
Used for obtaining a more faithful rendition of the scene or for obtaining special effects, by exaggerating or suppressing some of the tones. Five filters are available in the 49 mm filter mounts. Take exposure readings with the filter over the lens.

2. Filters for Color Films

Used for balancing the light when color film is exposed to light for which it is not suited. Six filters are available in the 49 mm filter mount. Take exposure readings without the filter and adjust by the filter factor indicated.

3. Polarizing Filter

Used for eliminating reflections from a non-metallic surface. Available in 49 mm mount. Also used for darkening the sky in color photography, or as a neutral type haze filter or as a neutral density filter, without effecting color or tone.



FILTER FACTORS FOR BLACK-AND-WHITE FILM

Designation	Color	J. I. S. #	Filter Factor		Similar to Kodak	Use
			Daylight	Tungsten		
UV (Ultraviolet)	Colorless	SL 39-3	1	1	1A	Use for high altitudes above 6,000 ft., as it eliminates ultraviolet and some blueviolet rays, which reduce contrast in the distant landscape, even on a clear day.
Y1	Light Yellow	SY 44-2	1.5	1	K1	Suitable for all outdoor work, landscapes, snow scenes and particularly effective for darkening the blue sky and thus accentuating clouds. Effective for photographing through distant haze.
Y2	Medium Yellow	SY 48-2	1.5	1.2	K2	Produces greater contrast in cloud against blue sky and foliage, and used for most accurate tonal reproduction with panchromatic films. Renders red and yellow lighter and blue darker. Can be used with color films for special effect.
O2	Medium Orange	SO 56-2	3.5	3	21	A special effect filter suitable for depicting heavy clouds against dark sky, for darkening the water surface in marine scenes and for bringing out details in distant views by reducing mist. Subdues skin blemishes in outdoor portraits. Renders yellow and red lighter and blue darker than seen with the eye.
R2	Medium Red	SR 60-2	6	5	25(A)	Greater contrast than Y2 and O2 filters, for dramatic cloud effect against black sky, or moonlight effect in midday with slight under-exposure. Also for dark wood furnitures by artificial light. Used with infrared film for extreme contrast in sky, for cutting through haze, fog and mist, and for special effects.
YG	Yellow Green				11(X1)	Used with panchromatic film for correct monochromatic rendering of multicolored objects in daylight scenes; also recommended for good flesh tones in outdoor portraits against the sky. Also absorbs ultraviolet, greater part of blue and some dark red rays.
Polarizing			2.5-4	2.5-4	POLAR	Used for both black-and-white and color films for eliminating reflections from nonmetallic surfaces, and especially useful for taking pictures through glass or water. Not effective for metallic surfaces.

Remarks: For panchromatic films, such as TRI-X, PANCHROME, ORTHO X. In the case of super panchromatic films, such as SUPER XX, PLUS X, PANATOMIC X, MICROFILM, ULTRA-SPEED, SUPREME, NEOPAN F and SS, filter factors for O2 will be 3 and 2 respectively.

FILTER FACTORS FOR DAYLIGHT COLOR FILM

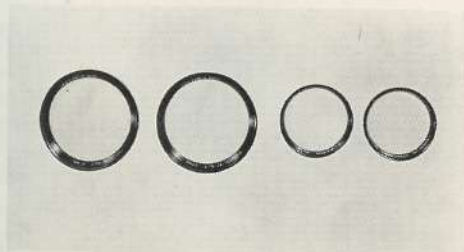
Designation	Color	Alteration in Color Temperature	Filter Factor	Similar to Kodak	Use
SKYLIGHT	Colorless		1	1A	Suitable for sunny weather as it absorbs ultraviolet rays and counteracts the tendency towards being excessively bluish, giving natural color balance, by adding warmth to the scene. Also for use in open shade. Effective for cutting bluish reflection from young foliage.
CLOUDY	Light Amber	7000°K—6000°K	1.2	81A	For use on cloudy days or in open shade under a clear and blue sky, as it lowers the color temperature and absorbs the bluish colors, giving overall color balance and saving the picture from being excessively blue.
TYPE F	Deep Amber	6000°K—4000°K	2.9	81B	For use with Type F film (such as Ektachrome Type F designed for use with clear flash lamp) when exposed for daylight, by lowering the daylight temperature to flash type film temperature and absorbing bluish colors.
MOR. & EVE.	Light Blue	5300°K—6000°K	1.6	82A	For use in the morning (before 9 a.m.) and evening (after 3 p.m.) hours, when the blue light of the sun is absorbed by the atmosphere and lowers the color temperature so that the picture will be excessively reddish. Raises color temperature and absorbs reddish colors.
FLASH	Blue	4000°K—6000°K	2.4	82C+82B	For use with clear flash bulbs, which have a lower color temperature than sunlight, and thus are not suitable for daylight color film. Raises color temperature and gives correct color balance of otherwise excessively reddish picture.
FLOOD	Deep Blue	3300°K—6000°K	3.2	80B	For use with flood lamps which have a much lower color temperature than daylight, by raising the low color temperature and absorbing the reddish colors. Not required with blue flood lamps.
Remarks: Daylight films are Kodachrome, Daylight: Kodacolor, Daylight: Ektachrome, Daylight: Ansco Color, Daylight: Agfa Color, Daylight: Gevaert Color, Daylight and Fuji Color, while Type F films are Ektachrome, Type F; Kodachrome, Type F and Anscochrome Flash Type.					

4. Lens Hoods

Used for eliminating stray light which might effect the brilliance and clarity of the picture, as well as protecting the lens surface from rain or snow, which could cause distortion. Always use the proper lens hood for the lens. The 135 mm and 200 mm lenses have built-in lens hoods which are simply pulled out for use.

5. Close-Up Attachment Lenses

Used on the filter mount of the lens for shooting at closer subject-to-camera distances than possible with the unassisted lens. Available in 49 mm and 67 mm mounts. Two close-up lenses may be used in combination, for closer focusing. The smallest possible aperture must be used to increase the depth of field and to improve reproduction around the edges.



Focusing Distances with Close-up Lenses

Unit: Meter Unit: Feet

No. 0 Close-Up Lens

UV Topcor f/4	28mm...1.8	~0.28	5.91~	0.91
UV Topcor f/3.5	35mm...1.5	~0.31	4.92~	1.02
UV Topcor f/2.8	50mm...1.5	~0.55	4.93~	1.81
UV Topcor f/4	100mm...1.5	~0.8	4.92~	2.62
UV Topcor f/4	135mm...1.56	~0.91	5.09~	3.0

No. 1 Close-Up Lens

UV Topcor f/4	28mm...0.71	~0.22	2.35~	0.72
UV Topcor f/3.5	35mm...0.74	~0.28	2.43~	0.92
UV Topcor f/2.8	50mm...0.73	~0.42	2.40~	1.39
UV Topcor f/4	100mm...0.75	~0.54	2.46~	1.77
UV Topcor f/4	135mm...0.79	~0.61	2.66~	2.0
UV Topcor f/4	200mm...6.4	~4.3	21	~14.1

No. 2 Close-Up Lens

UV Topcor f/4	28mm...0.37	~0.17	1.21~	0.56
UV Topcor f/3.5	35mm...0.44	~0.24	1.44~	0.79
UV Topcor f/2.8	50mm...0.43	~0.31	1.41~	1.04
UV Topcor f/4	100mm...0.45	~0.38	1.48~	1.25
UV Topcor f/4	200mm...4.4	~2.3	14.4	~ 7.55

No. 1 + No. 2 Close-Up Lenses

UV Topcor f/4	28mm...0.27	~0.13	0.90~	0.44
UV Topcor f/3.5	35mm...0.32	~0.22	1.05~	0.72
UV Topcor f/2.8	50mm...0.32	~0.26	1.04~	0.86
UV Topcor f/4	100mm...0.34	~0.3	1.12~	0.98
UV Topcor f/4	200mm...2.26	~1.76	7.41~	5.77

6. Eyepiece Adapter

Is slipped into the attachment grooves on both sides of the finder eyepiece frame, for using Magnifier and Angle View Finder. Permits these accessories to be flipped up, for normal view-focusing.



7. Magnifier

Is screwed into the eyepiece adapter and used for $2.5\times$ enlargement of a 12mm spot in the center of the field of view, for precise focusing in close-up shooting and photomicrography. Has an adjustable eyepiece for making $+5$ to -5 diopter adjustments, for increasing accuracy.



8. Angle View Finder

Also screwed into eyepiece adapter and used for view-focusing at right angle to the optical axis, in low shooting positions, close-ups and photomicrography. Also has $+3$ to -3 diopter adjustments of the eyepiece.



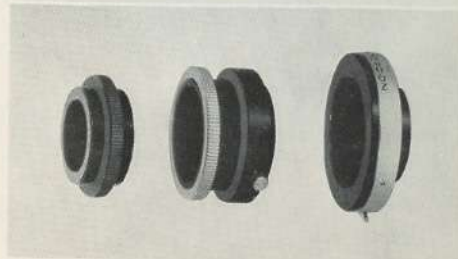
9. Microscope Attachment, Model U

For connection of camera body to microscope in photomicrograph, up to $400\times$ magnification. Suitable for focusing stage microscopes, with drawtube of 25mm outer diameter and $10\times$ ocular. Separates into two, for changing oculars or for continuing observation.



10. Telescope Adapter Set

Five ring set for connecting camera body to telescope in astrophotography. Can be connected to telescopes with drawtubes of 30.2mm and 36.2mm outer diameters or with T mount adapter.



11. Flash Gun, Model 1

Battery-capacitator type flash gun, with 3-way socket for accepting standard bayonet base, pinless miniature base and the baseless glass groove of the all-glass bulb. Fan adjustable for wide or narrow illumination angles and tiltable for use in 5 positions. Uses 22.5 volt battery.



Storage

1. Store your equipment in a cool, dry and well-ventilated place, away from humidity, salty air, dust, extremely high or low temperatures and corrosive fumes.
2. When storing the camera, take it out of its leather case, release the shutter, revolve the focusing ring to infinity, wrap the camera in a dry and soft lint-free cotton cloth and pack in a tin-lined container, with lots of desiccant, such as silica gel. Store other equipment in similar manner.
3. Take the equipment out once in a while, during long periods of storage, and give them an airing, when the weather is cool and dry.

Cleaning

1. Use a rubber-ball blower or a soft hair brush to eliminate dust from the equipment and then wipe clean with a soft lint-free cotton cloth.
2. Do not clean the lens too often. Wipe gently with a lens tissue, after first getting rid of the dust, as noted. If further cleaning is required, lightly dip the tip of a lint-free cloth into plain water, or pure grain alcohol, or a mixture of alcohol and ether (4:1 ratio) and wipe gently with a circular motion. Do not rub but wipe gently as many times as required.
3. Use a rubber-ball blower for cleaning the inside of the camera, including reflex mirror and pressure plate. Never wipe with lens tissue or cloth.
4. Do not use silicone cloth or silicone-treated eyeglass cleaning tissue paper for cleaning the lens surface because they might leave a coating.
5. Use clean brushes, too. If you touch them with your fingers, clean them before use, as you will simply transfer oil from your fingers to the brush and then to the lens surface.

CAMERA PASSED J.C. 11. 27

35mm.

J.C. 11. 36

Battery

1. Exchange the battery in the manner noted when inserting the new battery.
2. The battery can be used for about a year, under normal usage.
Exchange it annually or when the exposure needle does not move in the finder.
3. When storing equipment, take the battery out of the camera and store it in a dry location, too.
4. Do not take the battery apart, play with it, hit it or throw it into the fire.
5. Use a round mercury battery of 1.3 volt, such as TH-MC (Toshiba), No. 625 (General), E 625 (Everready) and PX-13 (Mallory).

Particulars of Your Equipment

Purchased: ^{3rd} ~~4th~~ - MAY - 1974

Store: WOODSEATS Photography
WOODSEATS.

Body No.: B00/15897

Standard Lens:

No.: 50mm. F/2.8
13381

Wide-Angle Lens:

No.: 9638815
35mm F3.5

Telephoto Lens:

No.: 135mm F4.
13932207

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