

# WILSONWERKS ARCHIVES

This camera manual is for reference and historical purposes, all rights reserved.

This cover page is copyrighted material. This document may not be sold or distributed without the express consent of the publisher.

©2008 wilsonwerks Llc



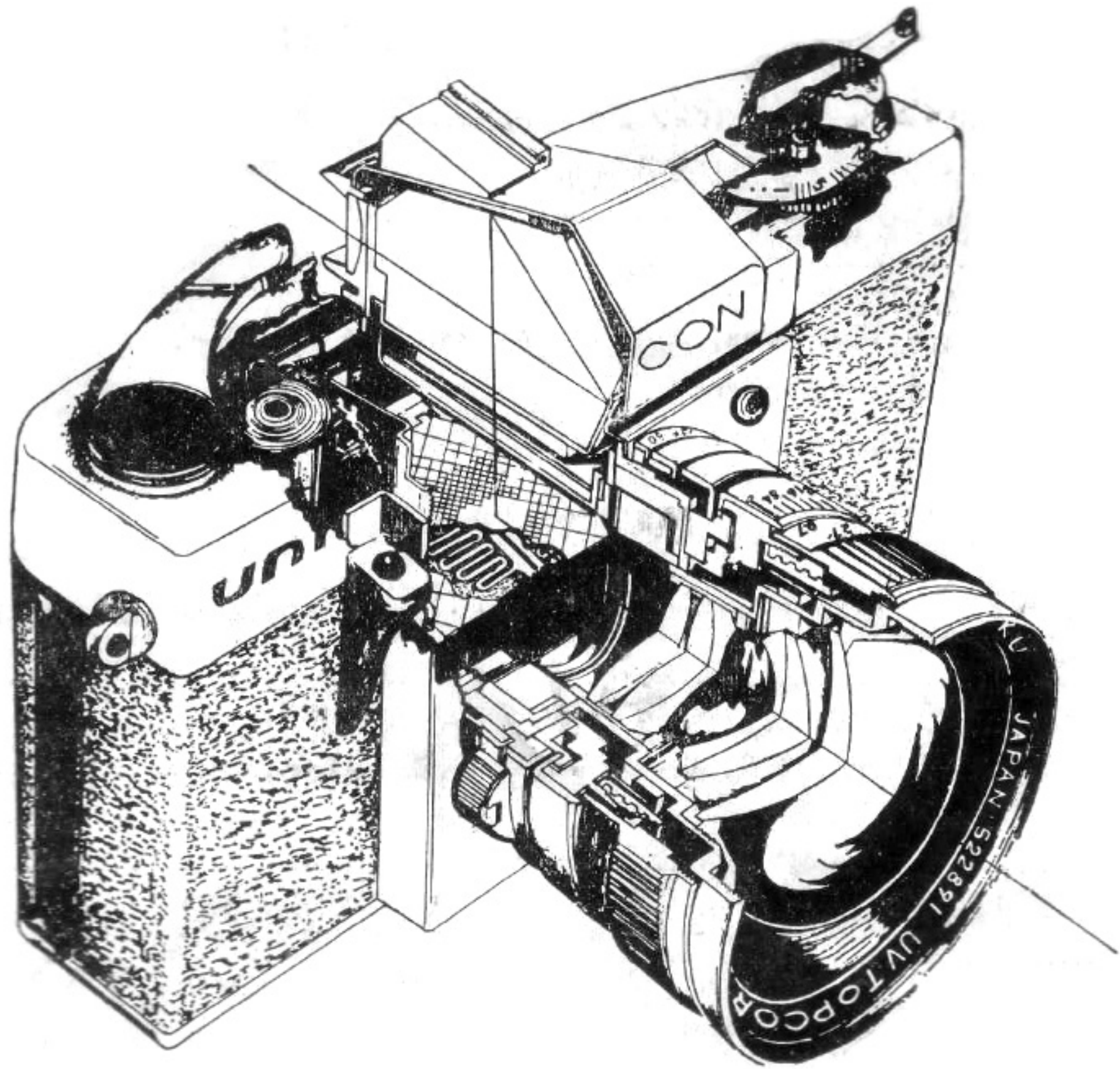
**TOPCON**  
**uni**

## **ELECTRIC-EYE PICTURE-TAKING**

- 1. Set film speed (ASA 25 to 400 or DIN 15 to 27).**
- 2. Set shutter speed (1/8 to 1/500 sec.).**
- 3. Set aperture ring to AUTO.**
- 4. Advance film winding lever.**
- 5. View-focus through the lens, and check aperture reading.**
- 6. Press shutter release button.**

## **IMPORTANT**

- 1. Don't touch the surface of the lens, mirror, eyepiece, as well as exposure window.**
- 2. Stroke the film winding lever all the way - until it stops.**
- 3. Wait until the shutter action is completed before stroking the film winding lever.**
- 4. Cover the lens when not in use.**
- 5. Don't force movements but re-read instructions once more.**
- 6. If your TOPCON UNI camera needs repair, don't do it yourself but contact the nearest authorized dealer.**



# CONTENTS

TOPCON UNI CAMERA .....	1
SPECIFICATION.....	3
NOMENCLATURE .....	5
CORRECT EXPOSURE .....	9
ELECTRIC-EYE AUTOMATION .....	9
COUPLED EXPOSURE SETTING .....	11
FREE EXPOSURE SETTING .....	15
SHUTTER ACTION .....	16
SELF-TIMER .....	17
CABLE RELEASE .....	17
VIEW-FOCUSING .....	18
COMPOSITION.....	18
FOCUSING .....	18
DEPTH OF FIELD .....	20
INFRARED INDEX .....	34
HOLDING THE CAMERA .....	35
HORIZONTAL HOLDING POSITION .....	35
VERTICAL HOLDING POSITION.....	36
FILM LOADING .....	37
OPENING CAMERA.....	37
LOADING CAMERA.....	37

CLOSING CAMERA .....	38
ADVANCING THE FILM .....	39
EXPOSURE COUNTER .....	40
FILM SPEED INDICATOR .....	40
FILM UNLOADING .....	42
REWINDING .....	42
UNLOADING .....	42
LENS EXCHANGE .....	43
STANDARD LENS .....	44
WIDE-ANGLE LENS .....	44
TELEPHOTO LENSES .....	44
REMOVING THE LENS .....	45
ATTACHING THE LENS .....	45
LENS COVERS .....	45
FLASH PHOTOGRAPHY .....	46
FLASH ILLUMINATION .....	46
FLASH SYNCHRONIZATION .....	47
FLASH EXPOSURE .....	47
ACCESSORIES .....	49
EXCHANGE OF BATTERY .....	58
STORAGE & CARE .....	59

# TOPCON UNI CAMERA

Congratulations on your choice of the TOPCON UNI camera which has been designed by our engineers and optical scientists as an ideal camera fulfilling the following basic requirements:—

1. Single lens reflex—for viewing and focusing of the exact subject image as it will be captured on the film.
2. Electric-Eye automation—for automatically setting the correct exposure to the camera simply by pointing it at the subject.
3. Complete lens interchangeability—for changing from the standard to the wide-angle or telephoto as the requirements of the picture may demand.
4. Superior UV lens coating—for producing crisper black-and-white shots and true-to-life color pictures.

But, besides these basic requirements, the camera also incorporates all the complicated mechanism that make picture-taking completely automatic, such as:—

1. Fully automatic instant re-opening lens diaphragm action—for holding the lens at wide aperture, for view-focusing ease, but stopping it down automatically to the selected aperture for the shutter action and then re-opening it once more to wide aperture.
2. Quick-as-a-wink mirror action—which, in coupled action with the automatic lens diaphragm action, swings the mirror up and out of the way for shooting and then snaps it down once more, quick-as-a-wink, for view-focusing.
3. Single stroke film winding lever action—not only advances the film one frame, but advances the exposure counter, charges the shutter and sets up the automatic lens diaphragm action.

4. Automatic re-setting additive exposure counter.

5. Automatic pop-up rewind button.

But, of course, the biggest difference of the TOPCON UNI camera is the built-in CdS thru-the-lens light metering system, which gives one of the most precise exposure readings possible—because it always reads the light coming through the lens (standard or interchangeable lenses, filters, etc.) and falling on the reflex mirror. The CdS cell is built-in behind the reflex mirror (and is, in fact, an integral layer of the mirror) and reads the light coming through narrow unsilvered slits on the mirror surface.

And, as an additional bonus, the camera also has:—

1. Complete electric-eye automation with all interchangeable lenses.
2. Special UV filter effect on all interchangeable lenses.
3. Aperture scale visible in finder, even with electric-eye automation.
4. Manual over-ride of electric-eye automa-

tion for shutter coupled exposure settings or complete freedom in exposure settings.

In other words, the camera is the ideal family camera because it can be used by every member of the family, from the person who wants an automatic camera to take care of all exposure setting problems, the person who wants a built-in exposure meter coupled to the camera for some freedom to adjust exposures, the person who wants a camera with a choice of wide-angle or telephoto lenses, which are not auxiliary lenses or which leave behind some component and merely exchange the front elements, to the person who would just rather set exposures according to experience,—because the camera is not a simple automatic camera but a well-built and designed camera which will satisfy even the demands of the advanced amateur.

While operation is very simple, may we suggest that you read the instructions through carefully so that you familiarize yourself with its working parts before you even load film in the camera.



## SPECIFICATION

### Lens:

UV Topcor 1:2 f-53mm 6 element standard lens. Fully automatic instant re-opening lens diaphragm. Straight helicoid focusing from 70cm to infinity. Bayonet mount lens interchangeability of complete lens.

Apertures: f/2, 2.8, 4, 5.6, 8, 11, 16 and 22.

### Shutter:

SEIKOSHA SLV behind-lens type.

Speeds: B, 1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250 & 1/500 sec.

MXV-switch (for M and X settings flash synchronization and self-timer).

### Finder:

Fixed eye-level Pentaprism finder, with  $0.75\times$  image (standard lens), and  $34.5\times 23\text{mm}$  finder screen.

With TOKOBRITE fresnel lens plate and micro-prism focusing spot.

Meter needle and aperture scale, indicates aperture readings.

### Exposure:

**AUTO**—Electric-eye automation.

Range: EV 5 to EV 18, with ASA 100 film.

Film speeds: ASA 25 to 400 (DIN 15 to 27).

Shutter speeds: 1/8 to 1/500 sec.

**COUPLED**—Shutter coupled exposure setting.

Range: EV 5 to EV 18, with ASA 100 film.

Film speeds: ASA 25 to 400 (DIN 15 to 27).

Shutter speeds: 1/8 to 1/500 sec.

**MANUAL**—Complete freedom in apertures/shutter speeds.

Range: EV 2 to EV 18, with ASA 100 film.

Film speeds: ASA 25 to 400 (DIN 15 to 27).

Shutter speeds: B, 1 to 1/500 sec.

### **Film Winding:**

180° single stroke.

### **Other Features:**

Red warning area indicating automatic exposure is not possible (shutter may be released).

Wink mirror system (instant return mirror action).

Automatic pop-up rewind button.

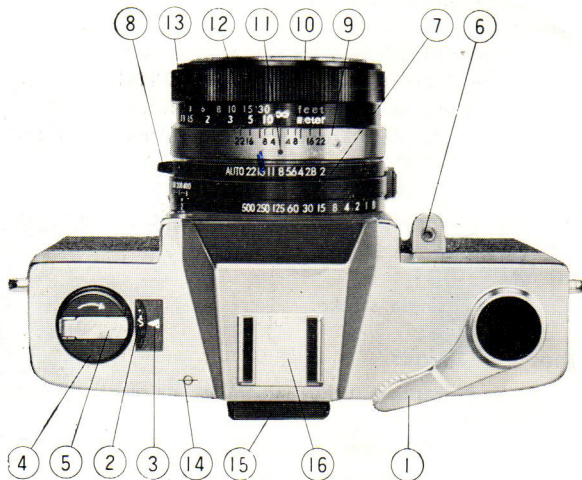
Fixed accessory shoe.

### **Size & Weight:**

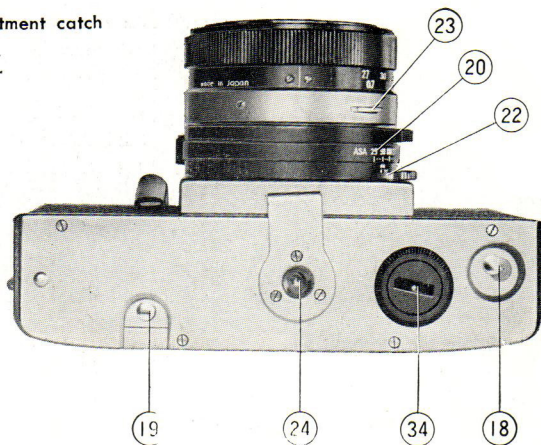
With standard lens: 136mm×93mm×84mm; 840 grams.

## NOMENCLATURE

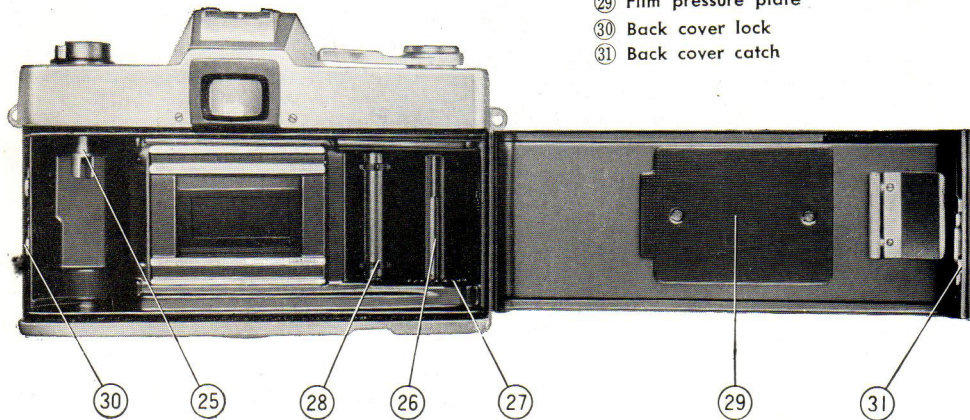
- ① Film winding lever
- ② Exposure counter scale
- ③ Exposure counter index
- ④ Rewind knob
- ⑤ Rewind crank
- ⑥ Shutter release button
- ⑦ Shutter speed ring
- ⑧ Aperture ring
- ⑨ Depth of field scale
- ⑩ Infrared index
- ⑪ Distance (aperture) index
- ⑫ Distance scale
- ⑬ Distance focusing ring
- ⑭ Film plane indicator
- ⑮ Eyepiece
- ⑯ Accessory shoe



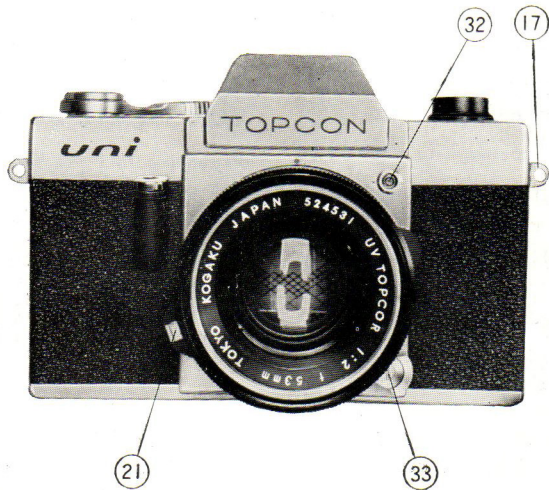
- ⑰ Shoulder strap lug
- ⑱ Back cover lock
- ⑲ Rewind button
- ⑳ Film speed scale
- ㉑ Film speed adjustment catch
- ㉒ Film speed index
- ㉓ Lens locking lever
- ㉔ Tripod socket



- ②5 Film cartridge shaft
- ②6 Film take-up spool slit
- ②7 Film take-up spool serrated flange
- ②8 Film transport sprocket
- ②9 Film pressure plate
- ③0 Back cover lock
- ③1 Back cover catch



- ③② Flash socket
- ③③ MXV-switch
- ③④ Battery cover



## **CORRECT EXPOSURE**

One of the most important factor for taking better pictures is correct exposure, which is the relationship between—

1. The shutter speed, and
2. The aperture (lens opening), as decided by
3. The brightness of the subject, and dependent on
4. The sensitivity (speed) of the film loaded in the camera.

In other words, it is important to be able to correctly judge the brightness of the subject, in order to determine the correct aperture to be used, because film speed is pre-determined by the film used and shutter speed is, more often than not, decided by the action of the subject.

Three methods of setting the correct exposure adjustments to the lens and shutter are possible in your camera—

1. Electric-eye automation.
2. Coupled exposure setting.
3. Free exposure setting.

### **ELECTRIC-EYE AUTOMATION:**

Presuming that the film is already loaded in the camera and the film speed set to the camera, the only actions required for taking pictures are:—

1. Set the shutter speed ring (7) to one of red-colored speeds  $1/500$  to  $1/8$  sec., by revolving the ring until the required speed is opposite the index.

The shutter speeds will click-stop into place.

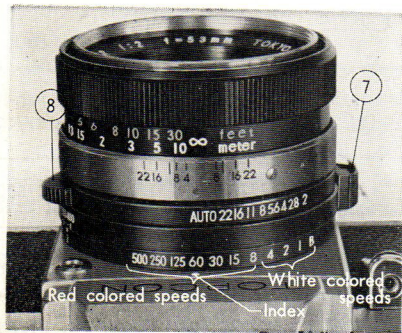
Use the shutter speed guide for choosing the most suitable speed for the lighting condition or action.

2. Set the aperture ring (8) to AUTO, which will set the electric-eye system into operation.

## 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
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
Hazy Sun Weak Shadows	1/125	1/125	1/125	1/125	1/250	1/250
Cloudy Bright No Shadows	1/60	1/60	1/60	1/60	1/60	1/125
Open Shade Under Clear Blue Sky	1/60	1/60	1/60	1/60	1/60	1/125
Cloudy Rain	1/30	1/30	1/30	1/30	1/30	1/60





3. Check the aperture scales seen on the left border of the finder and if the exposure needle is not in the red warning areas and is satisfactory, press the shutter button (6), and the picture will be taken. If the exposure needle is in the top red area, the picture will be under-exposed, while, if in the bottom red area, the picture will be over-exposed. If the former, revolve the shutter speed ring to the left, and, if the later, to the right, which will

have the effect of moving the exposure needle towards the middle area, in both cases, where the picture can be taken.

When revolving the shutter speed ring, in the above instances, do not move the shutter speed scale outside the 1/500 to 1/8 sec. range.

The shutter can be released even when the needle is in the red areas so the position of the needle must always be checked.

Of course, it is taken for granted that the film winding lever is also advanced, as well as view-focusing being undertaken, before the shutter is released.

### **COUPLED EXPOSURE SETTING:**

When the subject has too much contrast, or the back-light is brighter than the front-light, or if you want to take a close-up reading and then move back for the shot, or otherwise want to adjust the aperture setting to take into account possible over- or under-ex-

posure on electric-eye automation, try coupled exposure setting:—

1. Set the shutter speed to one of the red-colored shutter speeds, i.e., from 1/500 to 1/8 sec., the same as for electric-eye automation.
2. Take the aperture ring off AUTO, by revolving it to any other setting on the ring.
3. Point the camera lens at the subject and read the aperture setting indicated on the aperture scale in the finder.
4. Transfer the aperture reading to the aperture ring, i.e., revolve the aperture ring until the same aperture is opposite the index (11), or modify it and then transfer it, if this is required.
5. Press the shutter release button.

Incidentally, if the exposure needle is in the red warning areas, revolve the shutter speed ring, in the same manner noted for electric-

eye automation, but within the range 1/500 to 1/8 sec., and find the right combination of shutter speed and aperture.

Coupled exposure setting is suitable for those shots in which—

1. The background is very light and covers a greater area than the main subject of interest, which is also darker; because the exposure reading will be dominated by the lighter background and the main interest will be under-exposed. For example, shots against distant scene, or against snow-scapes, etc.
2. The opposite of the above, such as in night clubs, circuses, etc., in which the reading will be dominated by the darker background and the main interest will be over-exposed.
3. The main subject is back-lighted, because the subject's face will not be illuminated by the main light and will be under-exposed, if the reading is taken for the full

subject area.

4. The main subject is in the shade, because the reading will again be dominated by the surrounding light and will thus be under-exposed.

For the above shots, as well as for other shots, the exposure reading should be taken as follows:—

1. Landscape: Shield the camera taking lens (34) from the light reflected by the sky and point it so that it will be taking a reading of an area having less sky than the general overall scene, because the sky is much brighter than the general scene and if too much sky is included the overall effect will be under-exposure.
2. Subject against the open sky: When shooting airplanes, flags, buildings, etc., against an open expanse of sky, take an exposure reading of a similar object with the light striking it at the same angle as the subject and modify it by 1/2 stop less.
3. Contrasty subject: First decide what effect you are looking for in the final picture and take an exposure reading of the portion which interests you the most, letting the contrasty portion (lighter or darker portion) get lighter or darker, as the case may be.
4. Inaccessible subjects: If the subject is too far off, take an exposure reading of a similar subject (i.e., same texture and lighting condition) at close distance.
5. Back-lighted subject: The best method is to move in and take a close-up exposure reading of the front-lighted subject area only, using care to see that the back-light does not effect the reading. Otherwise, modify the exposure reading taken at the picture-taking position 3 or 4 times to take into account the excessive contrast between the back-light and the front-lighted area.

**Note :**

(1) When using the  $f/3.5$  wide-angle or  $f/4$  telephoto lenses, it is not possible to take shots at larger apertures than the maximum aperture of the lens attached to the camera. Thus, if the exposure needle indicates a reading of  $f/2$  or  $f/2.8$ , etc., the shutter speed ring should be revolved to a slower speed, in order to coincide the needle to a suitable aperture smaller than the maximum aperture of the taking lens.

(2) When using film other than ASA 100 and 200 sensitivities, the exposure reading can be unsuitable even when the exposure needle is not in the red warning areas, especially when a fast film is used at a slow shutter speed, or a slow film used at the fastest shutter speed, as in following specific instances, which should not be used:—

ASA 400 film  $f/2$  &  $1/8$  sec.

ASA 50 film  $f/22$  &  $1/500$  sec.

ASA 25 film  $f/16$  &  $1/500$  sec.

(3) For setting a slower shutter speed than  $1/8$  sec., use the aperture reading for  $1/8$  sec. but re-adjust, by stopping down the lens diaphragm by the same number of steps as the exposure time is increased, as follows:—

Shutter speed:  $1/8$ — $1/4$ — $1/2$ —1

Aperture: 4—5.6—8—11

(4) When exposure readings are taken in extremely bright places, such as at the seashore or in the desert, with the fast  $f/2$  standard lens attached to the camera, it may be found upon development that the negative is slightly over-exposed, due to the fact that the subject brightness was greater than the measuring range of the exposure meter.

To prevent such errors, it is recommended that a neutral density filter

of 4× or 8× is attached to the filter mount of the lens to cut down on the intensity of the light passing through the lens, when the subject brightness is more than EV 15 (say, f/11 and 1/250 sec., with ASA 100 film).

### **FREE EXPOSURE SETTING :**

When exposure settings are not possible by electric-eye automation or coupled exposure setting, it will be possible to use time exposures by setting the shutter speed ring to B (for bulb), in which case the shutter will remain open as long as the shutter release is pressed down.

Although only full numbers are used on the ring, it should be remembered that 500 is 1/500 sec., and 1 is a full 1 sec. and that, therefore, the larger number is the faster speed, meaning that the shutter remains open only for a 1/500 sec. duration during which time the light passes only 1/2 as long as the

preceding larger number and vice versa ; thus if lighting conditions remain unchanged, decreasing the speed will mean that the aperture will have to be opened to compensate for less light.

The choice of shutter is dependent on the lighting condition, as well as the need for stopping action. The brighter the light, the faster the speed that may be used, and vice versa. On the other hand, for stopping action, it should be noted that (1) a faster speed is required for a speedier subject, (2) a faster speed is needed for movement nearer to 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, and (4) the degree of stopping required will also determine the speed to be used.

The aperture ring has apertures or openings, called f/numbers, with exposure ratios, as follows :—

Aperture	2	2.8	4	5.6	8	11	16	22
Exposure ratio	1/4	1/2	1	2	4	8	15	30

The aperture or lens opening controls the amount of light that enters the lens and passes through to the film plane, by adjusting the lens opening as required. It can be seen that the larger numbers are the smaller openings and vice versa and that each smaller aperture permits only 1/2 the amount of light of the preceding larger aperture and that, therefore, if lighting conditions remain unchanged, stopping down will require a corresponding increase in the shutter speed.

In other words, if the shutter speed is originally set to 1/60 sec. for f/8, then it must be increased to 1/125 if the aperture is opened to f/5.6 or to 1/30 if the aperture is stopped down to f/11.

Exposure settings in this case will have to be decided by:

1. Using a suitable exposure meter, or,
2. Using an exposure chart, such as is usual-

ly included with the film, or,

3. Making your decision based on past experience.

## SHUTTER ACTION:

Since all the UV TOPCOR lenses are equipped with the fully automatic lens diaphragm action, the lens opening is always opened at the widest aperture for view-focusing ease. This means that the lens diaphragm must automatically close down to the required opening when the shutter button is pressed, and then open immediately back to the widest aperture—but, besides this, there are various other related actions which all take place in less than 1/10th of a second when the shutter is pressed, such as:—

1. The shutter blades close down completely.
2. The reflex mirror rises, the film blind opens fully and the lens diaphragm is stopped down.
3. The shutter blades open and close (for taking the picture).
4. The film blind opens, the mirror returns

to reflex viewing position, and the lens diaphragm opens fully.

5. The shutter blades open fully.

The action of the lens diaphragm is the result of the "fully automatic instant re-opening lens diaphragm action", while that of the reflex mirror is the product of the "quick-as-a-wink mirror action", both of which are required to produce the fast action required for taking the picture without loss of image.

When using slow shutter speeds, always wait until the shutter action is finished before advancing the film winding lever.

### **SELF-TIMER :**

For the purpose of delaying the actual shutter release action for 10 sec., after the shutter release button is pressed, use the built-in self-timer. After all preparations for taking the exposure have been completed, shift the MXV-switch (33) until V is aligned with the index, and then press the shutter release button as usual.

By utilizing the self-timer, it will be possible

to take your own photograph, or hold lighting equipment or reflector, or used it for minimizing camera vibration on the tripod.

Even when the self-timer is used, Electric-Eye automation takes place and the correct exposure for the lighting condition when the shutter is released is set to the camera.

Always return the MXV-switch to X-setting when not in use.

### **CABLE RELEASE :**

When using the camera on the tripod, etc., use a cable release screwed into the shutter release socket, instead of pressing the shutter button, as it will eliminate camera vibration.

## VIEW-FOCUSING

Two other important factors for getting better pictures are:—

1. Correct composition of the subject within the film negative area, and
2. Accurate focusing of the image on the film plane.

Both these factors are taken care of by a single system, i.e., view-focusing through the lens, in your camera.

## COMPOSITION :

Since the reflected light from the subject, which passes through the camera lens to the film plane for taking the picture, is intercepted by the reflex mirror, which is placed in the light path, and reflected upwards to the finder's focusing screen:—

1. Parallax is completely eliminated, because the viewing and taking lens are the same, and you can compose exactly as it will

be taken in the picture, and

2. The same area seen in the finder will be covered in the final picture.

Furthermore, the eye-level Pentaprism finder, which reverses the laterally reversed image reflected upwards by the reflex mirror, gives the following advantages:—

1. A right side up laterally correct image, moving in the same direction as the actual subject, is especially valuable for moving subjects.
2. Because of the erect laterally correct image, both eyes can be used, one for looking through the finder and one for viewing the general scene.
3. Eye-level viewing also means correctly lateral and erect images in vertical formats.

## FOCUSING :

Since view-focusing is through the camera

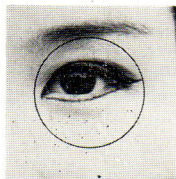


lens, all focusing adjustments are made directly on the lens itself by revolving the distance focusing ring (13), and checking the effect on the focusing screen in the finder.

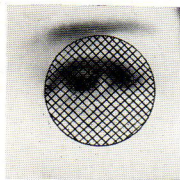
The focusing screen has :—

1. A micro-prism focusing spot.
2. A fine focus ring, around the spot.
3. A full-area ground glass, boosted by fresnel lens.

**Micro-Prism Focusing Spot :** The focusing spot in the center is made up of numerous microscopic prisms which break up the image



In Focus



Not in Focus

when it is not in focus so that the image is seen indistinct and blurred. When the distance focusing ring is revolved and the subject is accurately focused, the image in the focusing spot will be seen distinctly and sharply.

Subjects with linear features will be particularly effective for focusing because the straight lines will look ragged and broken up when out of focus but will be seen straight when in focus.

When in doubt, revolve the distance focusing ring either ways from what is considered optimum focusing and check the effect.

**Fine Focus Ring :** Around the micro-prism focusing spot can be seen a clear ring which is made of extra-fine ground glass only. This ring may also be used, either singly or in combination with the focusing spot, for focusing of subjects without linear features.

When the distance ring is revolved and the subject is correctly focused, the finder image will be seen distinctly and sharply, while, if

focusing is not correct, the subject will be seen blurred and indistinctly. As with the focusing spot, revolve either ways of the optimum focus to check whether focusing is correct or not.

**Full-Area Ground Glass:** The full-area of the focusing screen, except for the focusing spot and fine focus ring, is fine ground glass backed by a fresnel plate lens for obtaining a brilliantly illuminated subject field from edge-to-edge, without dark corners. In other words, the whole subject area is always distinctly seen and may be focused on the full ground glass area.

Focusing is done in the same manner as for the fine focus ring and focusing spot.

For speedier focusing, use the full focusing screen, combining all the focusing means, i.e., focusing spot plus fine focus ring plus full ground glass, because it will also mean that composition and focusing can be undertaken at the same time.

The distance actually focused can be checked by reading the distance scale (12) opposite the distance index (11).

## DEPTH OF FIELD:

When you have focused on a certain subject (plane), it will be seen that not only that subject but other subjects, both in front and behind the main interest, will also be seen sharply, although this will not be true for everything before or behind the main interest.



In other words, when a subject has been focused at a certain distance, the lens presents an apparently sharp image not only at the focused distance but also at somewhat farther and nearer distances. This zone of apparent sharpness is known as the depth of field and the rules governing the extent of the depth of field are :—

1. The depth of field is greater as the diaphragm (aperture) is closed down, and least as the diaphragm is opened up. In other words, the wide-open aperture of the fully automatic lens always shows the least depth of field and is valuable for precise focusing.
2. The depth of field is greater as the focused distance increases and least as the camera-to-subject distance decreases.
3. The depth of field is greater behind the focused subject (in the background) and shallower before the focused subject (in the foreground) but grows progressively

equal as the focusing distance gets shorter.

4. The depth of field increases when the wide-angle lens is attached and decreases when the telephoto lens is used, both in comparison to the standard 53 mm lens.

The depth of field of the lens can be utilized for getting pictures with backgrounds or foregrounds out of focus, or for getting subjects in the foreground and background sharply, or for covering the deepest possible range in action shots, etc.

**Depth of Field Scale :** The depth of field scale (9), on the lens barrel, is utilized for checking the scope of the depth of field because it shows at a glance the zone of apparent sharpness at any lens opening or distance.

The depth of field scale is next to the distance scale (12) and is made up of identical pairs of apertures on both sides of the dis-

tance index (11), which also represents the widest aperture of  $f/2$ . These identical pairs of apertures indicate the distance that will be in focus at these lens opening.

**1. Finding the depth of field:** For example, if the lens opening is  $f/11$  and the distance focused is 10 meters (as in the illustration), read the distances opposite the aperture  $f/11$  (the line between 8 and 16) on both sides of the depth of field scale which will show that the depth of field extends from approximately 4.5 meters to infinity. On the other hand, if greater depth of field is required, see which lens opening will cover the required field. If, for example, the zone should extend from 3 meters, it will be seen that  $f/22$  will give the required depth of field which will be from about 3 meters to infinity. Of course, shutter speed will have to be decreased to compensate for the reduction in the effective amount of light.

**2. Zone focusing:** When it is required to cover two subjects at different distances from the camera, first focus on the nearest subject, for example, 2 meters, and then the farther subject, say, 5 meters, both found with the distance scale. Next, revolve the distance focusing ring until these distances are opposite identical apertures (approx.  $f/16$ , in this case) and use this lens opening for the shot.

**3. Fast zone focusing:** When there is not enough time for finding the two limits for the above zone focusing method, focus on a subject about two-fifths of the way into the required zone of sharpness and choose an aperture which will give sufficient sharpness over the whole field.

Increase the depth of field, whenever possible, by stopping down the lens opening rather than by increasing the focusing distance, or

by using the wide-angle lens.

**Depth of Field Table:** For greater accuracy in the depth of field, because the depth of field scale figures are in round sums, use the depth of field tables on pages 24 to 33.

In all instances, measure the distances from the focal or film plane (indicated by the marking (14) on the camera's top deck) to the main subject.

For critical pin-point sharpness, always use wide aperture and focus on the main plane, because everything within the depth of field is not of equal sharpness but, on the contrary, grows less sharp as it gets farther from the plane of focus.

## DEPTH OF FIELD TABLE (distances in feet)

UV Topcor F/2 53mm

1/30mm

Aperture Distance	2	2.8	4	5.6	8	11	16	22
∞	∞ ~ 141.3	∞ ~ 101.1	∞ ~ 70.8	∞ ~ 50.7	∞ ~ 35.6	∞ ~ 26.0	∞ ~ 18.0	∞ ~ 13.2
30	38.0 ~ 24.8	42.5 ~ 23.2	51.8 ~ 21.2	73.2 ~ 19.0	193.8 ~ 16.4	∞ ~ 14.0	∞ ~ 11.4	∞ ~ 8.92
15	16.7 ~ 13.6	17.5 ~ 13.1	18.9 ~ 12.4	21.1 ~ 11.7	25.7 ~ 10.7	35.2 ~ 9.62	93.4 ~ 8.30	∞ ~ 7.13
10	10.7 ~ 9.37	11.0 ~ 9.14	11.6 ~ 8.81	12.3 ~ 8.42	13.7 ~ 7.89	16.0 ~ 7.32	22.2 ~ 6.54	42.0 ~ 6.07
8	8.45 ~ 7.60	8.65 ~ 7.45	8.96 ~ 7.23	9.41 ~ 6.97	10.2 ~ 6.61	11.4 ~ 6.20	14.1 ~ 5.64	20.1 ~ 5.09
6	6.24 ~ 5.77	6.35 ~ 5.69	6.51 ~ 5.57	6.74 ~ 5.41	7.13 ~ 5.20	7.67 ~ 4.95	8.81 ~ 4.59	10.7 ~ 4.23
5	5.17 ~ 4.85	5.24 ~ 4.79	5.34 ~ 4.70	5.50 ~ 4.59	5.74 ~ 4.44	6.09 ~ 4.26	6.77 ~ 4.00	7.83 ~ 3.72
4	4.10 ~ 3.90	4.14 ~ 3.87	4.21 ~ 3.81	4.30 ~ 3.74	4.45 ~ 3.64	4.64 ~ 3.52	5.02 ~ 3.35	5.57 ~ 3.16
3.5	3.58 ~ 3.43	3.61 ~ 3.40	3.66 ~ 3.36	3.72 ~ 3.30	3.83 ~ 3.23	3.97 ~ 3.14	4.24 ~ 3.00	4.61 ~ 2.85
3	3.05 ~ 2.95	3.08 ~ 2.93	3.11 ~ 2.90	3.16 ~ 2.86	3.23 ~ 2.80	3.33 ~ 2.74	3.51 ~ 2.63	3.75 ~ 2.52
2.5	2.54 ~ 2.47	2.55 ~ 2.45	2.57 ~ 2.43	2.60 ~ 2.41	2.65 ~ 2.37	2.72 ~ 2.32	2.83 ~ 2.25	2.98 ~ 2.17
2.25	2.28 ~ 2.22	2.29 ~ 2.21	2.31 ~ 2.20	2.33 ~ 2.17	2.37 ~ 2.14	2.42 ~ 2.11	2.50 ~ 2.05	2.62 ~ 1.99

## DEPTH OF FIELD TABLE (distances in meters)

UV Topcor F/2 53mm

1/30mm

Aperture Distance	2	2.8	4	5.6	8	11	16	22
∞	∞ ~ 43.1	∞ ~ 30.8	∞ ~ 21.6	∞ ~ 15.5	∞ ~ 10.8	∞ ~ 7.92	∞ ~ 5.47	∞ ~ 4.01
10.0	13.0 ~ 8.14	14.7 ~ 7.58	18.5 ~ 6.87	28.3 ~ 6.11	∞ ~ 5.24	∞ ~ 4.46	∞ ~ 3.57	∞ ~ 2.89
5.0	5.64 ~ 4.49	5.94 ~ 4.32	6.47 ~ 4.08	7.33 ~ 3.81	9.19 ~ 3.45	13.5 ~ 3.10	63.0 ~ 2.65	∞ ~ 2.26
3.0	3.21 ~ 2.81	3.31 ~ 2.75	3.46 ~ 2.65	3.69 ~ 2.53	4.10 ~ 2.38	4.76 ~ 2.21	6.54 ~ 1.97	9.28 ~ 1.75
2.0	2.09 ~ 1.92	2.13 ~ 1.89	2.19 ~ 1.84	2.28 ~ 1.79	2.42 ~ 1.71	2.63 ~ 1.62	3.08 ~ 1.49	4.19 ~ 1.37
1.5	1.55 ~ 1.45	1.57 ~ 1.44	1.60 ~ 1.41	1.65 ~ 1.35	1.72 ~ 1.33	1.82 ~ 1.28	2.02 ~ 1.20	2.33 ~ 1.12
1.2	1.23 ~ 1.17	1.24 ~ 1.16	1.26 ~ 1.14	1.29 ~ 1.12	1.33 ~ 1.09	1.39 ~ 1.06	1.50 ~ 1.01	1.66 ~ 0.95
1.0	1.02 ~ 0.98	1.03 ~ 0.97	1.04 ~ 0.96	1.06 ~ 0.95	1.09 ~ 0.93	1.12 ~ 0.90	1.19 ~ 0.87	1.29 ~ 0.83
0.9	0.92 ~ 0.88	0.92 ~ 0.88	0.93 ~ 0.87	0.95 ~ 0.86	0.97 ~ 0.84	1.00 ~ 0.82	1.05 ~ 0.79	1.12 ~ 0.76
0.8	0.81 ~ 0.79	0.82 ~ 0.78	0.83 ~ 0.78	0.84 ~ 0.77	0.85 ~ 0.75	0.87 ~ 0.74	0.91 ~ 0.72	0.96 ~ 0.69
0.7	0.71 ~ 0.69	0.71 ~ 0.69	0.72 ~ 0.68	0.73 ~ 0.68	0.74 ~ 0.67	0.75 ~ 0.65	0.78 ~ 0.64	0.82 ~ 0.62

## DEPTH OF FIELD TABLE (distances in feet)

UV Topcor F/4 200mm

1/30mm

Aperture Distance	4	5.6	8	11	16	22
∞	∞ ~941	∞ ~672	∞ ~471	∞ ~343	∞ ~237	∞ ~173
200	254~165	284~154	347~141	481~127	135~109	∞ ~93.0
100	112~90.5	117~87.2	127~82.7	141~77.7	173~70.7	240 ~63.7
70	75.5~65.3	78.0~63.5	82.0~61.1	87.7~58.4	99.1~54.3	117 ~50.1
50	52.7~47.6	53.9~46.7	55.8~45.4	58.3~43.8	63.1~41.5	70.1~39.0
40	41.7~38.4	42.4~37.8	43.6~37.0	45.1~36.0	47.9~34.4	51.8~32.7
30	30.9~29.1	31.3~28.8	31.9~28.3	32.9~27.7	34.2~26.8	36.1~25.8
25	25.7~24.4	25.9~24.2	26.3~23.8	26.9~23.4	27.8~22.8	29.0~22.0
20	20.4~19.6	20.6~19.5	20.8~19.3	21.2~19.0	21.7~18.6	22.5~18.1



## DEPTH OF FIELD TABLE (distances in meters)

UV Topcor F/4 200mm

1/30mm

Aperture Distance	4	5.6	8	11	16	22
$\infty$	$\infty \sim 287$	$\infty \sim 205$	$\infty \sim 144$	$\infty \sim 105$	$\infty \sim 72.1$	$\infty \sim 52.6$
50	60.5~42.6	66.1~40.3	76.6~37.2	95.9~33.9	165~29.6	$\infty \sim 25.7$
30	33.5~47.2	35.1~26.2	37.8~24.9	42.0~23.4	51.3~21.3	70.3~19.2
20	21.5~28.7	22.1~18.3	23.2~17.6	24.6~16.9	27.6~15.8	32.2~25.4
15	15.8~14.3	16.2~14.0	16.7~13.6	17.4~13.2	18.9~12.5	20.9~11.8
12	12.5~11.5	12.7~11.4	13.1~11.1	13.5~10.8	14.3~10.4	15.5~9.85
10	10.3~9.68	10.5~9.56	10.7~9.38	11.0~9.17	11.5~8.84	12.3~8.47
8	8.22~7.80	8.30~7.72	8.44~7.61	8.62~7.47	8.94~7.25	9.36~7.01
7	7.16~6.85	7.23~6.79	7.33~6.70	7.47~6.59	7.70~6.42	8.01~6.23
6	6.12~5.89	6.17~5.85	6.24~5.78	6.34~5.70	6.50~5.58	6.71~5.44

## DEPTH OF FIELD TABLE (distances in feet)

UV Topcor F/4 135mm

1/30mm

Aperture Distance	4	5.6	8	11	16	22
∞	∞ ~ 419.61	∞ ~ 299.97	∞ ~ 210.24	∞ ~ 153.14	∞ ~ 105.56	∞ ~ 77.01
100	132.36 ~ 80.29	151.97 ~ 74.41	195.28 ~ 67.02	302.91 ~ 59.61	2191.05 ~ 50.30	∞ ~ 42.32
50	56.65 ~ 44.77	59.85 ~ 42.97	65.39 ~ 40.54	73.98 ~ 37.87	94.82 ~ 34.14	143.69 ~ 30.55
30	32.24 ~ 28.06	33.24 ~ 27.35	34.86 ~ 26.36	37.13 ~ 25.22	41.67 ~ 23.53	48.88 ~ 21.78
20	20.96 ~ 19.13	21.37 ~ 18.81	22.01 ~ 18.34	22.88 ~ 17.79	24.50 ~ 16.94	26.78 ~ 16.03
15	15.52 ~ 14.51	15.74 ~ 14.33	16.08 ~ 14.06	16.53 ~ 13.74	17.35 ~ 13.24	18.44 ~ 12.69
12	12.33 ~ 11.69	12.46 ~ 11.57	12.67 ~ 11.40	12.94 ~ 11.19	13.43 ~ 10.86	14.06 ~ 10.50
10	10.22 ~ 9.79	10.31 ~ 9.71	10.45 ~ 9.59	10.63 ~ 9.44	10.95 ~ 9.21	11.36 ~ 8.95
8	8.14 ~ 7.87	8.19 ~ 7.82	8.28 ~ 7.74	8.39 ~ 7.65	8.58 ~ 7.50	8.82 ~ 7.33
7	7.10 ~ 6.91	7.14 ~ 6.86	7.21 ~ 6.81	7.29 ~ 6.74	7.43 ~ 6.62	7.61 ~ 6.49
6	6.07 ~ 5.93	6.10 ~ 5.90	6.15 ~ 5.86	6.20 ~ 5.83	6.30 ~ 5.73	6.43 ~ 5.64
5	5.05 ~ 4.95	5.07 ~ 4.93	5.10 ~ 4.91	5.13 ~ 4.87	5.20 ~ 4.82	5.28 ~ 4.76

## DEPTH OF FIELD TABLE (distances in meters)

UV Topcor F/4 135mm

1/30mm

Aperture Distance	4	5.6	8	11	16	22
$\infty$	$\infty \sim 127.9$	$\infty \sim 91.4$	$\infty \sim 64.1$	$\infty \sim 46.7$	$\infty \sim 32.2$	$\infty \sim 23.5$
30	39.1 ~ 24.3	44.6 ~ 22.6	56.3 ~ 20.5	84.3 ~ 18.3	609.8 ~ 15.6	$\infty \sim 13.2$
20	23.7 ~ 17.3	25.5 ~ 16.5	29.0 ~ 15.3	34.9 ~ 14.1	53.1 ~ 12.4	142.4 ~ 10.9
10	10.8 ~ 9.29	11.2 ~ 9.04	11.8 ~ 8.68	12.7 ~ 8.28	14.4 ~ 7.68	17.3 ~ 7.07
5	5.19 ~ 4.82	5.27 ~ 4.75	5.40 ~ 4.66	5.57 ~ 4.54	5.87 ~ 4.36	6.29 ~ 3.61
3	3.07 ~ 2.94	3.09 ~ 2.91	3.13 ~ 2.88	3.19 ~ 2.84	3.28 ~ 2.77	3.40 ~ 2.69
2	2.03 ~ 1.97	2.03 ~ 1.96	2.05 ~ 1.95	2.08 ~ 1.93	2.11 ~ 1.90	2.16 ~ 1.87
1.7	1.72 ~ 1.68	1.73 ~ 1.67	1.74 ~ 1.66	1.75 ~ 1.65	1.78 ~ 1.63	1.81 ~ 1.61

DEPTH OF FIELD TABLE (distances in feet)

UV Topcor F/4 100mm

1/30mm

Aperture \ Distance	4	5.6	8	11	16	22
$\infty$	$\infty \sim 250.6$	$\infty \sim 179.2$	$\infty \sim 125.6$	$\infty \sim 91.5$	$\infty \sim 63.1$	$\infty \sim 46.1$
100	108.6 ~ 71.6	226.3 ~ 64.4	496.7 ~ 55.9	$\infty \sim 48.0$	$\infty \sim 38.9$	$\infty \sim 31.7$
50	62.3 ~ 41.8	69.2 ~ 39.2	82.8 ~ 35.9	110.1 ~ 32.5	246.3 ~ 28.1	$\infty \sim 24.2$
30	34.0 ~ 26.9	35.9 ~ 25.8	39.2 ~ 24.3	44.4 ~ 22.7	57.0 ~ 20.5	86.6 ~ 18.4
20	21.7 ~ 18.6	22.4 ~ 18.1	23.7 ~ 17.3	25.4 ~ 16.5	29.0 ~ 15.3	35.1 ~ 14.1
15	15.9 ~ 14.1	16.3 ~ 13.9	16.9 ~ 13.5	17.8 ~ 13.0	19.5 ~ 12.2	22.0 ~ 11.5
10	10.4 ~ 9.64	10.5 ~ 9.51	10.8 ~ 9.32	11.1 ~ 9.08	11.8 ~ 8.73	12.6 ~ 8.33
7	7.18 ~ 6.83	7.25 ~ 6.77	7.37 ~ 6.65	7.43 ~ 6.56	7.78 ~ 6.37	8.13 ~ 6.17
5	5.09 ~ 4.92	5.12 ~ 4.89	5.17 ~ 4.84	5.24 ~ 4.78	5.36 ~ 4.69	5.52 ~ 4.58

DEPTH OF FIELD TABLE (distances in meters)

UV Topcor F/4 100mm

1/30mm

Aperture \ Distance	4	5.6	8	11	16	22
$\infty$	$\infty \sim 76.4$	$\infty \sim 54.6$	$\infty \sim 38.3$	$\infty \sim 27.9$	$\infty \sim 19.2$	$\infty \sim 14.1$
20.0	27.0~15.9	31.5~14.7	41.9~13.2	71.3~11.7	$\infty \sim 9.99$	$\infty \sim 8.31$
10.0	11.5~8.87	12.2~8.48	13.5~7.97	15.5~7.41	20.8~6.63	35.3~5.90
5.0	5.34~4.71	5.48~4.60	5.72~4.45	6.05~4.27	6.70~4.01	7.69~3.73
3.0	3.11~2.89	3.16~2.86	3.24~2.80	3.34~2.73	3.52~2.62	3.76~2.51
2.0	2.05~1.96	2.07~1.94	2.10~1.91	2.14~1.88	2.21~1.83	2.30~1.78
1.7	1.73~1.67	1.75~1.66	1.77~1.64	1.80~1.62	1.84~1.58	1.90~1.54
1.5	1.53~1.48	1.54~1.47	1.55~1.54	1.57~1.44	1.61~1.41	1.65~1.38

## DEPTH OF FIELD TABLE (distances in feet)

UV Topcor F/3.5 35mm

1/30mm

Aperture Distance	3.5	4	5.6	8	11	16	22
∞	∞ ~ 37.5	∞ ~ 32.9	∞ ~ 23.6	∞ ~ 16.6	∞ ~ 12.1	∞ ~ 8.43	∞ ~ 6.21
20	42.5 ~ 13.2	50.7 ~ 12.5	133.6 ~ 19.9	∞ ~ 9.18	∞ ~ 7.66	∞ ~ 6.03	∞ ~ 4.83
10	13.5 ~ 7.97	14.2 ~ 7.84	17.1 ~ 7.12	24.8 ~ 6.35	57.2 ~ 5.60	∞ ~ 4.69	∞ ~ 3.94
7	8.51 ~ 5.96	8.78 ~ 5.84	9.78 ~ 5.48	11.8 ~ 5.02	16.1 ~ 4.55	41.7 ~ 3.94	∞ ~ 3.41
5	5.70 ~ 4.46	5.82 ~ 4.39	6.23 ~ 4.19	6.98 ~ 3.92	8.23 ~ 3.64	11.8 ~ 3.20	25.7 ~ 2.89
3	3.22 ~ 2.80	3.26 ~ 2.78	3.37 ~ 2.71	3.57 ~ 2.60	3.85 ~ 2.48	4.43 ~ 2.31	5.46 ~ 2.13
30"	31.8 ~ 28.5	32.0 ~ 28.2	32.9 ~ 27.6	34.4 ~ 26.7	36.4 ~ 25.7	40.5 ~ 24.2	47.0 ~ 22.6
24	25.0 ~ 23.1	25.2 ~ 22.9	25.7 ~ 22.5	26.6 ~ 22.0	27.7 ~ 21.3	29.9 ~ 20.3	33.0 ~ 19.2
18	18.5 ~ 17.5	18.6 ~ 17.4	18.9 ~ 17.2	19.3 ~ 16.9	19.8 ~ 16.6	20.8 ~ 16.0	22.1 ~ 15.4
15	15.3 ~ 14.7	15.4 ~ 14.6	15.5 ~ 14.5	15.8 ~ 14.3	16.1 ~ 14.1	16.7 ~ 13.7	17.5 ~ 13.3

### DEPTH OF FIELD TABLE (distances in meters)

UV Topcor F/3.5 35mm

1/30mm

Aperture Distance	3.5	4	5.6	8	11	16	22
∞	∞ ~ 11.4	∞ ~ 10.0	∞ ~ 7.18	∞ ~ 5.05	∞ ~ 3.70	∞ ~ 2.57	∞ ~ 1.89
5.0	8.80 ~ 3.51	9.88 ~ 3.37	16.3 ~ 2.98	∞ ~ 2.55	∞ ~ 2.16	∞ ~ 1.73	∞ ~ 1.40
3.0	4.02 ~ 2.40	4.23 ~ 2.33	5.07 ~ 2.15	7.26 ~ 1.92	16.0 ~ 1.69	∞ ~ 1.42	∞ ~ 1.20
2.0	2.40 ~ 1.72	2.47 ~ 1.69	2.72 ~ 1.59	3.23 ~ 1.46	4.24 ~ 1.33	8.96 ~ 1.16	∞ ~ 1.01
1.5	1.71 ~ 1.34	1.74 ~ 1.32	1.86 ~ 1.26	2.08 ~ 1.18	2.44 ~ 1.10	3.47 ~ 0.98	7.21 ~ 0.87
1.2	1.32 ~ 1.10	1.34 ~ 1.09	1.41 ~ 1.05	1.53 ~ 0.99	1.72 ~ 0.93	2.15 ~ 0.85	3.14 ~ 0.77
1.0	1.08 ~ 0.93	1.10 ~ 0.92	1.14 ~ 0.89	1.21 ~ 0.85	1.32 ~ 0.81	1.56 ~ 0.75	2.00 ~ 0.69
0.8	0.85 ~ 0.76	0.86 ~ 0.75	0.88 ~ 0.73	0.93 ~ 0.71	0.98 ~ 0.68	1.10 ~ 0.64	1.30 ~ 0.59
0.6	0.63 ~ 0.58	0.63 ~ 0.57	0.64 ~ 0.56	0.66 ~ 0.55	0.69 ~ 0.53	0.74 ~ 0.51	0.82 ~ 0.48
0.4	0.41 ~ 0.39	0.41 ~ 0.39	0.42 ~ 0.39	0.42 ~ 0.38	0.43 ~ 0.37	0.45 ~ 0.36	0.47 ~ 0.35

## INFRARED INDEX:

For infrared photography, infrared film is used which is sensitive only to the blue-violet infrared wave lengths whereas panchromatic film is sensitive to all the colors of the spectrum.

Since focusing is done with the visible point, seen in white light, some focusing adjustment must be made because the infrared wave

lengths are longer in wave lengths and not visible to the naked eye. The infrared index (10) is the red line representing  $f/4$  opening on the depth of scale, which should be used for making such adjustments.

In other words, once focusing has been done in the regular manner (say, the distance is 10 meters), shift the distance obtained to the infrared index, as in the illustration.

For infrared photography, use a suitable red filter and read the instructions, enclosed with film, for determining exposure settings.





## HOLDING THE CAMERA

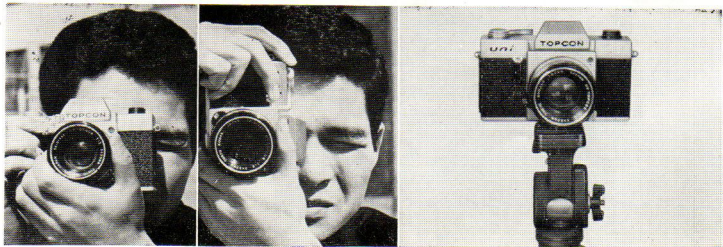
Another important factor for obtaining superior pictures is the proper support of the camera, not only to provide a steady and comfortable position for holding the camera but also one that will permit speedy handling for taking successive pictures.

### Horizontal Holding Position:

This is the holding method for taking pictures in the horizontal format, which is the most common. Take a firm grip on the distance focusing ring (13), with the left thumb and

left forefinger, resting the camera body on the palm of the left hand. Next, place the right thumb against the film winding lever (1), with either the right forefinger or middle-finger on the shutter release button (6) and the rest of the hand cradling the right side of the camera body. The right hand will advance the film and take the picture, aiming the camera at the same time, while the left hand will do most of the holding and also take care of focusing.

The camera should be raised to the right eye, leaving the left eye free to take in the whole field. The elbows should be pressed



against the body for support and the camera should also be pressed against the forehead to minimize camera movement.

### **Vertical Holding Position:**

Without changing the basic holding position for the horizontal format, turn the camera around until the film winding lever is topmost. Now the left side of the camera body will be supported by the left hand. The right elbow will not be pressed against the body but will jut out into space, not giving any support to the camera; but this version is superior to turning it around the opposite way because the winding lever can still be used for speedy action.

To keep camera shake at a minimum :—

1. Spread the legs wide apart for body steadying purpose. Use the body or as much of it as possible for steadying the camera, such as digging the elbows into the body, pressing the camera against

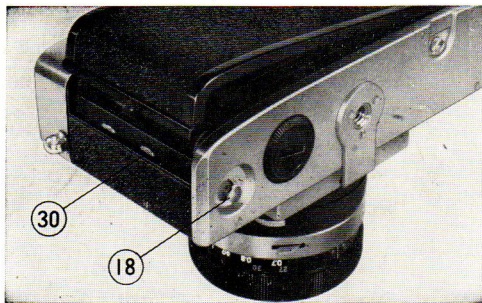
the forehead, etc.

2. Don't tense the fingers but hold the camera firmly and leave the fingers free to do their work.
3. Don't jerk or strongly press the shutter button but press it smoothly and gently.
4. Whenever possible use the tripod, especially at the slower shutter speeds 1/15 sec. and slower.
5. Use props, like desk, chair, tree or anything that does not move, when the tripod cannot be used.
6. Pull the neck strap taut, looping it around the wrist, if necessary, to brace the camera against the body.

## FILM LOADING

Use 35 mm film in daylight cartridges which will give either 20 or 36 exposures of 24 mm × 36 mm size black-and-white pictures. There are also colors films of 12, 20 and 36 exposures in the same size.

Load and unload films away from direct sunlight or strong artificial illumination, although it will not be necessary to get into a darkened room. Get in the shade, whenever possible, even if it is your own body shade,



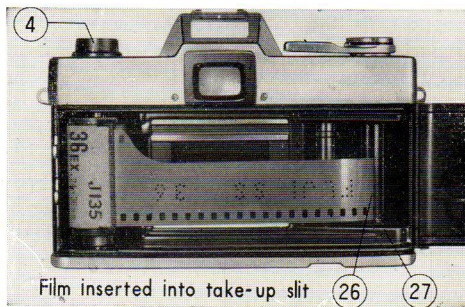
and place the camera on the table or lap so that it will not be dropped accidentally.

### Opening Camera:

1. Shift the back cover lock (18) and press it strongly. The back cover will spring open, and, therefore,
2. Pull it open all the way.

### Loading Camera:

3. Pull up the rewind knob (4), as far as it



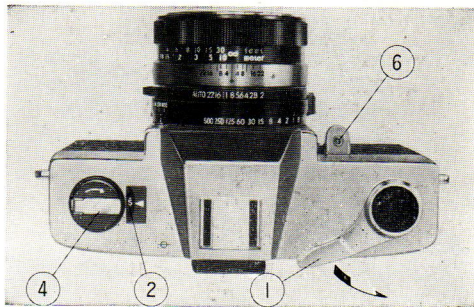
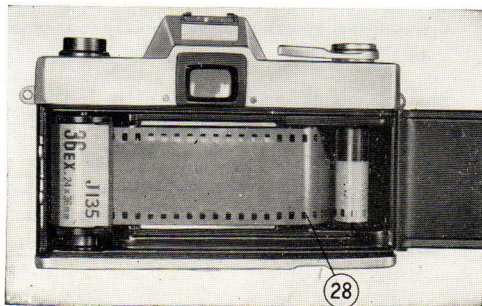
will go, and insert a fresh film cartridge into the empty film chamber. The leading end of the film should be pointed in the direction of the take-up spool slit (26).

4. Push the rewind knob back down into position. If it does not catch the film cartridge, revolve the rewind knob slightly until the slot on the film cartridge shaft (25) catches.
5. Pull out the film about 14–15 cm from the cartridge and insert it as deep as

possible into the take-up spool slit (26). If the slit is not visible, revolve the take-up spool, with the serrated flange (27) until the slit is topside.

6. Check whether the bottom perforation of the film engages the teeth of the film transport sprocket (28) and advance the film winding lever (1) carefully, checking once more whether the top perforation are also fully engaged.

### Closing Camera :



7. If the top and bottom perforations are fully engaged, close the back cover by pressing it tightly until it catches and does not open.
8. Slowly turn the rewind knob (4), in the direction of the arrow engraved on it, which will tension the film inside the cartridge. Each film winding lever action will now revolve the rewind knob counter-clockwise, thus indicating that the film is being advanced properly.

### **Advancing the Film:**

9. Push the film winding lever with thumb of the right hand until a full stop is made, as otherwise the shutter button cannot be pressed.

Each film winding lever action takes care of the following actions:—

1. The film is advanced one frame.
2. The exposure counter is advanced one frame.

3. The shutter is charged.
4. The automatic lens diaphragm mechanism is set up for action.

10. Press the shutter release button (6).
11. Repeat actions (9) and (10) once more. The two blank shots just finished will mean that two frames have been advanced and that the next film winding action will place the third frame into position for actually taking the first shot.

The two blank shots are required because the first two frames are usually exposed in film loading.

## EXPOSURE COUNTER

For keeping track of the number of exposures taken, your camera has an automatic exposure counter (2) which works automatically with the opening and closing of the camera's back cover. In other words, whenever the back cover is closed, the exposure counter automatically returns to the starting mark "S".

The two blank shots made in loading the film puts the exposure counter on the second white dot, indicating that the next film winding action will place the counter on "1".

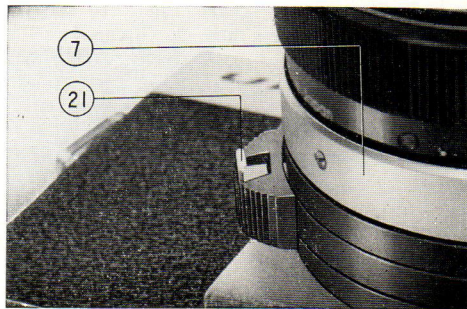
The counter has numerals 1...5...10...15, indicating every fifth shot, up to 35 exposures, with white lines in between to show each shot.

The numeral 20, as well as the line after 35, are red-colored, to show when the 20 or 36 exposure film is all exposed.

## FILM SPEED INDICATOR

Upon loading the film, the film speed index should be set to the proper film sensitivity (speed) of the film loaded in the camera, because it is of prime importance for obtaining correct exposure.

Pull the film speed adjustment catch (21), on the shutter speed ring knob (7), outwards, which will free the film speed scale, and revolve the ring to set the required film speed to one of the following three indexes:—



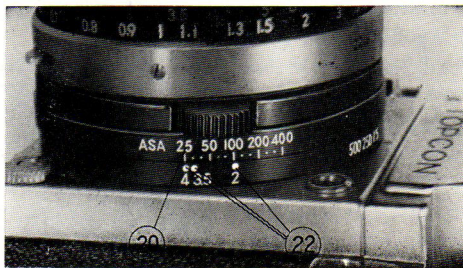
- 2 .....to be used with lens having maximum f/2 aperture
- 3.5.....to be used with lens having maximum f/3.5 aperture
- 4 .....to be used with lens having maximum f/4 aperture

There are 13 click-stopping ASA film speeds

from 25 to 400, with the dots between numerals indicating intermediate film speeds.

Check instructions enclosed with the film for the correct film speed, and if speeds other than ASA are indicated, use the following conversion table for finding the corresponding ASA film speed.

ASA		(32)	(40)		(64)	(80)		(125)	(160)		(250)	(320)	
	25	⋮	⋮	50	⋮	⋮	100	⋮	⋮	200	⋮	⋮	400
	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
DIN	15	16	17	18	19	20	21	22	23	24	25	26	27



## FILM UNLOADING

After the last exposure is taken, the film should be returned to its cartridge and then taken out for development.

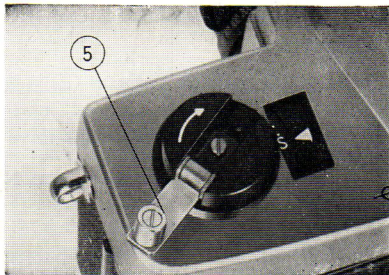
When the exposure counter indicates that the last exposure has been made, do not advance the film any more or you will tear it or pull it out of its cartridge.

In any case, if the winding lever does not move easily, check the exposure counter to see whether it is the last exposure or not. If so, do not advance the winding lever but leave it half-advanced, as it is, and proceed with rewinding the film.

At any rate, don't open the back cover, at this time, or you will ruin your exposed film.

### Rewinding:

1. Depress the rewind button (19) strongly.
2. Unfold the rewind crank (5) from its storage position and revolve it clockwise,



in the direction of the arrow. Rewind smoothly and at an even speed **BECAUSE** erratic or too rapid rewinding may cause static electricity marks on the film.

3. Rewind until tension lessens as the film end slips out of the take-up spool and then stop rewinding. Do not rewind the leading end back into the cartridge but leave the tip protruding.

### Unloading:



4. Open the back cover, as already noted.
5. Pull up the rewind knob and lift out the cartridge.
6. Bend the end of the film (as a sign that the film has been exposed) and place it in its original package until development.

**Note:**

The rewind button may be left depressed because the next film winding lever action will automatically pop it up.

## LENS EXCHANGE

Besides the standard lens which is supplied with the camera, other lenses are available separately and may be used interchanged with the standard lens.

All UV TOPCOR lenses have been specially designed for use on the single lens reflex camera and are not inferior to, if not superior to, other more expensive lenses found in focal plane shutter cameras in its resolving power and rendition.

All UV TOPCOR lenses have been specially coated to cut the ultra-violet (UV) rays and thus give breath-taking true-to-life color renditions of outdoor scenes at all times, and eliminate the need for an UV filter outdoors for black-and-white camera work.

All UV TOPCOR lenses are straight helicoid focusing and incorporate the electric-eye automatic exposure system, the fully automatic instant re-opening lens diaphragm action, as well as being coupled with the quick-as-a-wink

mirror action, and, moreover, are fully interchangeable, without any lens element being left behind in the camera, nor are they simple auxiliary lenses which are attached to the front of the standard lens.

An exclusive bayonet mount permits simple, accurate and speedy exchange of the lenses, while the SEIKOSHA SLV No. 00 shutter is incorporated behind-the-lens, in the body.

#### **Standard Lens :**

The standard UV TOPCOR lens is a 53 mm focal length optic, with a fast speed of  $f/2$ , and has 6 elements in 4 groups. The lens focuses down to a close distance of 70 cm.

#### **Wide-Angle Lens :**

The UV TOPCOR wide-angle lens has a shorter-than-standard-focal length of 35 mm, and a speed of  $f/3.5$ . The lens construction is 6 elements in 5 groups, and the minimum focusing distance is 40 cm. The lens covers a wider field of view, than the standard lens,

at the same camera-to-subject distance, and shows an image which is much smaller and a depth of field which is much deeper

The wide-angle, because of these characteristics, is used for shooting where it is not possible to back up, such as in architectural shots, interior shots, groups in small rooms, etc., as well as for candid shots (because of the deeper depth of field) and exaggerated perspective shots (because of its wide field of view).

#### **Telephoto Lenses :**

The UV TOPCOR telephoto lenses when compared to the standard lens, cover a more narrow field of view, show a smaller picture area, a larger image pulled in closer and a shallower depth of field. The lenses are thus, used for shooting distant objects, which cannot be approached close enough to isolate and emphasize, and for portraiture, because of their natural perspective and because their shallow depth of field eliminate distracting backgrounds.

Three telephoto lenses, all with maximum f/4 apertures, are available. The shortest is a 100mm focal length lens of 5 elements, focusing down to 1.5 meters and covering a 24° field of view. The next in order is the 135mm focal length lens, also of 5 elements, which focuses down to 1.7 meters, covers a 18° angle, and is widely used for portraiture work. The longest lens is the 200mm focal length telephoto which has 6 elements, focuses down to 6 meters and has a narrow 12° field of view.



### Removing the Lens:

Press the lens locking lever (29), which will disengage the lens locking system. Rotate the lens counter-clockwise until it stops, release

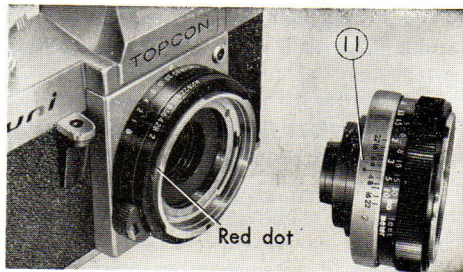
pressure on the lens locking lever and continue rotation until it makes a full stop again. Then lift it out gently.

### Attaching the Lens:

Line up the red dot, that serves as the distance index (11), with the red dot on the body flange and insert the lens carefully. When well-seated, revolve clockwise until it stops and clicks into position.

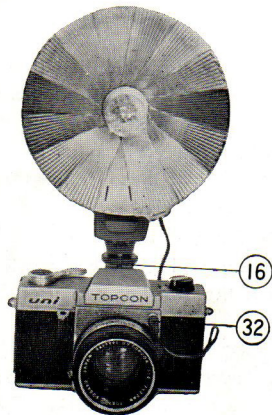
### Lens Covers:

When not in use, protect the lens surface with the lens cap. Cover the rear ends of lenses detached from the camera with rear lens caps.



## FLASH PHOTOGRAPHY

When available light is not sufficient for taking pictures at the desired aperture or speed, or if there is a total lack of illumination, or if the subject is in the shadow and details are obscured, use artificial illumination, such as photolamps, flash bulbs or electronic flash.



As a portable and economical method of artificial illumination, simply mount a flash gun in the accessory shoe (16) on top of the Pentaprism finder, and insert the flash cord plug into the flash socket (32). Larger units should be used with a suitable bracket.

The bracket should be fixed to the bottom of the camera, with the fixing screw locking it to the tripod socket (24).

### Flash Illumination:

The various types of flash bulbs which may be used with the flash unit are classified according to their time-to-peak (firing delay) or the time it takes from contact until peak brightness is reached. Class M and Class F bulbs, as well as electronic flash, can be used with your camera.

1. **Class F:** The firing delay is 4-7 milliseconds. Although light output is low, the stopping action is a fast 1/200 sec.
2. **Class M:** The firing delay is 18-20

milliseconds. The light intensity is very great and, therefore, it is used when maximum light output is necessary.

In this class are included the small miniature flash bulbs and all-glass (AG) no-base flash bulbs, both of which give great light output inspite of their very small sizes.

- 3. Electronic Flash:** There is no firing delay with electronic flash or strobe-lights. The intensity is not very great but they may be re-used many times, after a suitable re-cycling period. Of course, the initial outlay is comparatively expensive and is only suitable for those users who require artificial illumination quite often. The speed is a very fast 1/250 or 1/500 sec. or better, stopping most actions.

### **Flash Synchronization:**

Since the flash bulbs and electronic flash units, which can be used with your camera have

different firing delays, the shutter action must be synchronized so that it will fire the bulb by closing the flash contact at the appropriate moment for the time-to-peak of the bulb being used.

Two settings, M-setting and X-setting, are built into the camera to take care of flash synchronization when Class M and Class F flash bulbs, as well as electronic flash units, are used. Simply shift the MXV-switch (33) to M or X, and the flash circuit will be set up for use of the various flash bulbs and electronic flash. The shutter speeds that may be used when the various flash illuminations are used at either of these settings are shown on the following table.

V-setting is for use of the self-timer; flash synchronization will only be possible on X-setting when the self-timer is used.

### **Flash Exposure:**

In flash photography, do not use the exposure meter because it will not work. Consequent-

## SUITABLE SHUTTER SPEEDS FOR FLASH BULBS

Class	Make	Type	Setting	
			X	M
F	General Electric Westinghouse Sylvania	SM	1 ~ 1/125	
		SF		
M	Osram	S2	1 ~ 1/15	1 ~ 1/500
		S0, S1	1 ~ 1/30	1 ~ 1/500
	Philips	No. 5/1.1/12		
	General Electric Westinghouse			
S	Sylvania	No. 0/25-40	1 ~ 1/15	1 ~ 1/30
	Philips	PF 110		
	General Electric	No. 50		
	Westinghouse			
	Sylvania	No. 3		
Electronic Flash			1 ~ 1/500	

ly, take the aperture scale off "AUTO".

In flash photography with the flash unit on the camera accessory shoe, the distance focused will be of great importance for calculating the correct aperture, because the brightness of light decreases with the square of the distance, or, in other words, an object 2 meters away will receive only one-fourth the light of an object 1 meter away.

Find the guide number for the bulb being used (usually found in the instruction sheet furnished with the flash bulb and based on the shutter speed and film speed being used), and divide it by the distance from the flash to subject, which will give the correct aperture. For example, the guide number is 50 and the distance 3 meters from flash unit to subject, the aperture will be  $f/16$ . This figure is based on the use of an efficient reflector in a room of average brightness or size. For a brighter room use a smaller aperture, and for a larger room, or at night outdoors, use a larger aperture.

## ACCESSORIES

For greater enjoyment of photography with your camera, use the following accessories, which must be purchased separately, as required:—

### FILTERS:

In black-and-white photography, the filter attached before the lens absorbs wavelengths of their complementary colors and thus darken them, while transmitting wavelengths of their own colors and thus lighten them, and are, therefore, used for obtaining a more faithful rendition of the scene, as seen by the eye, by controlling the different tones.

However, the filter may also be used for the purpose of obtaining special effects by exaggerating or suppressing some of the tones for highlights, dramatic or odd effects.

Four filters, i.e., Light Yellow, Medium Yellow, Medium Orange and Medium Red, are avail-

## 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.
<b>Remarks:</b> 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.
<p>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.</p>					

able in 49mm and 58mm screw-in filter mounts. The UV Topcor lenses all have built-in UV filtration and, therefore, do not require the attachment of a UV filter.

In color photography, however, the filter is used for balancing the light when the color film is exposed to light for which it is not suited or balanced, because all color films are made for specific color qualities or light sources.

Six filters, i.e., Skylight, Cloudy, Mor. & Eve., Flash, Flood and F Type, are also available in both 49mm and 58mm screw mounts.

The polarizing filter, on the other hand, is used with both black-and-white and color films for the purpose of eliminating reflections from a non-metallic surface, with the camera used at an angle of from 32 to 37 degrees from the surface and the filter revolved until only light vibrating on a single plane gets through, with the effect checked on the focusing screen. The filter may also be used for darkening the sky in color photography, or as a neutral

type haze filter, without warming up colors, or as a neutral density filter of 2.5× to 4×, without effecting color rendition or tone.

The polarizing filter is available only in the 49mm filter mount.

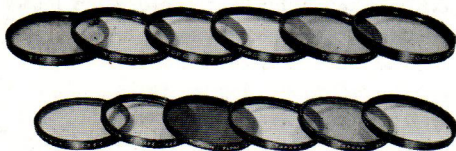
Since filters absorb part of the light that would normally reach the film, it will be necessary to increase exposure time or use a larger aperture when using filters before the lens.

The additional exposure ratio depends on the film color sensitivity, color of the prevailing light or artificial illumination to be used, and the color of the filter, and is called the filter or multiplying factor, and will be found together with other pertinent information on the instruction sheets enclosed with the filters.

For panchromatic films, however, it should be noted that it will only be necessary to take an exposure reading with the filter over the lens and the reading will already include the approximate exposure factor, which will also be the case when the polarizing filter is placed over the lens and exposure reading taken.

Both 49mm and 58mm screw-in filters are simply screwed into the front filter mount of the lenses, with the 49mm type being used on the 35mm, 53mm and 100mm focal lengths while the 58mm type is used on the 135mm lens.

The 200mm telephoto lens has a filter mount of 67mm and accepts Series filters.



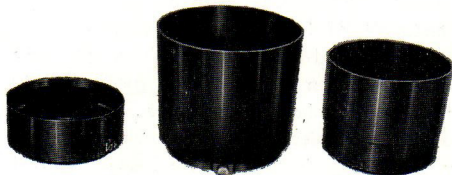
## LENS HOODS:

The lens hoods should be used as much as possible, especially for against-the-light shots and artificial illumination shots, because the lens hood will eliminate stray light which might otherwise effect the brilliance and clarity of the picture. At the same time, the lens hood

will also protect the lens surface from rain or snow which could cause image distortion.

There is one 55mm diameter screw-in lens hood for both the standard and wide-angle lenses, a 55mm diameter screw-in type for the 100mm telephoto lens and a 60mm diameter snap-on type for the 135mm telephoto, while the 200mm telephoto lens has a built-in collapsible lens hood which is simply extended for use and pushed back in for storage.

The wrong lens hood should not be used, in the case of the former 4 lenses because it will cause vignetting.



## CLOSE-UP LENSES :

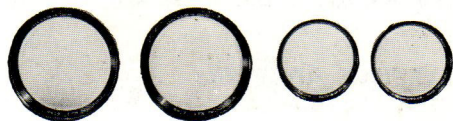
The close-up lens is used for shooting at closer subject-to-camera distances than possible with the unassisted lens. Two close-up lenses can be screwed into the filter mount of the lens in combination or a single close-up lens may be attached, without changing the single lens view-focusing advantage, but the smallest possible aperture should be used to increase the depth of field and for increased image reproduction around the edges.

The close-up lenses are available in two diameters, namely 49mm and 67mm, with the former for use on the f/3.5 35mm wide-angle lens, f/2 53mm standard lens and f/4 100mm telephoto lens, while the latter is for the f/4 200mm telephoto lens.

In the 49mm diameter, there are three close-up lenses, i.e., No. 0, No. 1 and No. 2, while there are two close-up lenses in the 67mm diameter, or No. 1 and No. 2. The No. 0 close-up lens is only for use on the f/4 100mm

telephoto lens, however, and cannot be used on the 35mm wide-angle and 53mm standard optics.

The use of the close-up lenses will permit the lenses to cover the following focusing distances :—



### **UV Topcor f/3.5 35mm wide-angle lens**

No. 1 .....	70cm to 30cm
No. 2 .....	45cm to 25cm
No. 1+No. 2.....	33cm to 23cm

### **UV Topcor f/2 53mm standard lens**

No. 1 .....	70cm to 40cm
No. 2 .....	45cm to 30cm
No. 1+No. 2.....	31cm to 26cm

### **UV Topcor f/4 100mm telephoto lens**

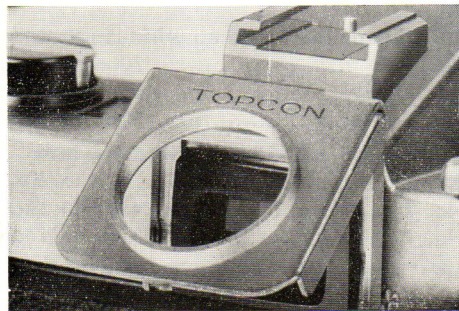
No. 0 .....	153cm to 81cm
-------------	---------------

- No. 1 ..... 75cm to 55cm
- No. 2 ..... 45cm to 40cm
- No. 1+No. 2..... 34cm to 31cm

**UV Topcor f/4 200mm telephoto lens**

- No. 1 .....6 meters to 3 meters
- No. 2 .....3 meters to 2 meters
- No. 1+No. 2 .....2 meters to 1.5 meters

**EYEPIECE ADAPTER:**



The eyepiece adapter is simply slipped into the attachment grooves on both sides of the camera's eyepiece frame and used exclusively for attachment of the Magnifier and Angle View Finder. The adapter will also permit these accessories to be flipped up, out of the way temporarily, because it is hinged.

**MAGNIFIER:**



The magnifier has been specially designed for use in macrophotography and photomicrography, but may also be used in general shooting, with the central 12mm diameter field of view being enlarged 25X for very precise focusing of the image. The accessory is used screwed into the eyepiece adapter

and thus may be flipped up out of the way for viewing the whole field of view, when necessary. For greater accuracy, the magnifier has an adjustable eyepiece, for producing dioptric adjustments from  $+5$  to  $-5$  diopters, to suit the user's eyesight.

### **ANGLE VIEW FINDER:**



The angle view finder has been specially designed for use with the camera in low shoot-

ing positions, when it is rather difficult to use the eye-level Pentaprism finder, or in macro-photography and photomicrography, when it is often necessary to view-focus at right angle to the optical axis of the camera.

As with the magnifier, the accessory is simply screwed into the eyepiece adapter on the eyepiece frame, and the full field of view is then seen laterally reversed but erect. There is also  $+3$  to  $-3$  diopter adjustments of the eyepiece for improving focusing accuracy.

### **MICROSCOPE ATTACHMENT, MODEL U:**

The attachment is a two-piece extension tube for connecting the camera body directly to the microscope in photomicrography, up to  $400\times$  magnification, which may be disconnected quite simply into two parts for the purpose of changing oculars or continuing visual observation.

The attachment is suitable for use with focusing stage type microscopes, with drawtube of 25mm external diameter, and with 10× ocular, as the full field of view will then be captured on the negative frame.



### **FLASH GUN:**

The lightweight battery-capacitator type flash gun is simply inserted into the accessory shoe of the camera and fixed into place, with the

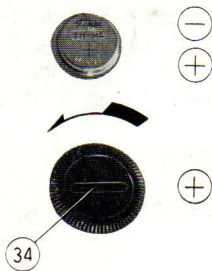
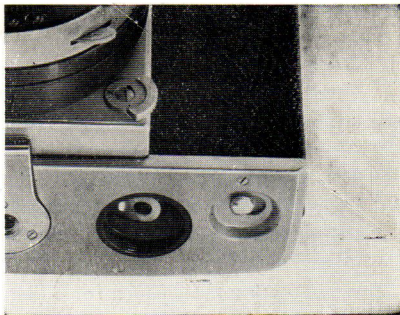
synchro-cord used for connecting the gun and camera, for use in flash-illuminated shots. The three-way socket accepts 3 types of flash bulb bases, i.e., the standard bayonet base, the pinless miniature base and the baseless glass groove of the all glass bulb. The folding fan reflector is adjustable for wide or narrow illumination angles and is tiltable in 4 click-stop stages, for use in 5 positions, i.e., straight forward, 30° upward, 60° upward, 90° upward and 120° from the straight forward position, for various bounce flash lighting effects. The flash gun accepts a 22.5 volt battery of the hearing aid type, has a flash calculator dial for both black-and-white and color films and is complete with a test button for checking flash bulb and electric charge.

Instruction sheets are enclosed with all accessories and should be read carefully for correct use of the accessories.

## EXCHANGE OF BATTERY

Use a coin, or similar object, to unscrew the battery compartment cover (34). Let the stale battery drop out of the compartment. Insert the new battery, being careful that the + side is facing outwards or else you will short-circuit your meter.

The battery is a round mercury battery of 1.3 volt, similar to PX-13 (Mallory) E625 (Everready), No. 625 (General and TH-MC (Toshiba). It is recommended that you exchange the mercury battery every year because it does not slow down but suddenly drops dead.





## STORAGE & CARE

1. Store your camera, lenses and accessories away from humidity, salty air, dust, extremely high or low temperatures and corrosive fumes, and store in a cool, dry and well-ventilated place.
2. Do not store them in closed compartments, containers or in the glove compartment of the car.
3. When storing the camera for a long time, 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 place it in a tin-lined container, with a tight cover, and put in a lot of desiccant, such as silica gel. Also store the lenses and accessories in the same manner.
4. If the camera is stored for a very long time, take it out once in a while to give it an airing when the weather is cool and dry.
5. Protect your camera, lens and accessories against rain, dust, sand, strong sunlight and salty air outdoors by keeping the cover of the leather everready case closed except for the actual shot.
6. After using your camera-outdoors, always use a blower to blow away the dust, or a soft hair brush to brush the dust away, and then wipe it clean with a soft lint-free cloth.
7. Do not clean the lens too often but, when doing so, always use the blower or soft brush first to get rid of the dust and then gently wipe it with a lens tissue. If further cleaning is necessary, very lightly dip a lint-free cloth into plain water, or pure grain alcohol, or possibly a mixture of alcohol and ether (4:1 ratio), and gently wipe the lens surface in a circular motion. Do not rub the surface on any condition.
8. If the camera is dropped into the ocean,

wash immediately with clean water, lubricate with good quality oil and send out for repairs at once.

9. Clean the inside of the camera, the reflex mirror and pressure plate, with an air blower only, and never wipe with lens tissue or cloth.
10. Do not use silicone cloth or silicone-treated eyeglass cleaning tissue paper for wiping the lens surface because they are liable to leave a coating on the surface. All lens cleaning brushes should be oil-free; if you should touch the brush with your fingers, clean it before using because it will simply transfer the oil from your skin to the lens surface.