

 SPENDING TOO MUCH MONEY ON PILLS



Diet Pill, Pain Pill, Smoking Pill, Baldness Pill
MY E HEALTH STORE.COM

OK

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OK

**Instructions
for using the
Box Camera
(NON-SYNCHRONISED MODEL)**

*Takes the Standard
Size 120 Film*

W.299/E

Printed in England

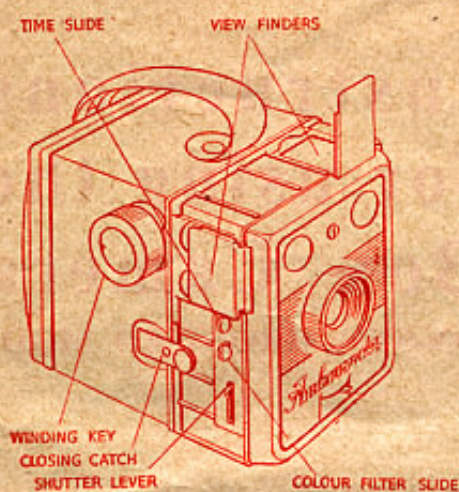


Fig. 1

IMPORTANT

Before attempting to take a photograph first make yourself familiar with the various movements and fittings, as shown in Fig. No. 1.

HOW TO LOAD YOUR CAMERA

This camera can be loaded in daylight, but do not load in direct bright sunlight ; always get into the shade.

Pull out winding key as far as it will come, at the same time turning it in a clockwise direction.

Release the clips on each side of camera.

This will enable you to open the camera as illustrated in Fig. 2.



Fig. 2

Insert spool of film in the holder at the bottom of the metal interior, with the end of the paper pointing towards the back of the camera.

Gently break and remove the gummed band that fastens your new spool of film. Lead the paper carefully over the rollers and across the opening in the back of the camera as illustrated in Fig. 3.



Fig. 3

Unfold the end of the red paper and thread it through the longest slot in the empty spool. Give the spool two or three turns to make quite certain the paper is held securely. Take care that this paper fits squarely into the slot, otherwise the film will not wind properly.

If, when fitting the red paper into the empty spool, you take the spool from the camera, make certain when you replace it that the slotted end of the spool is next to the cut-out portion in the spool holder.

Now close the camera. Refit it so that the winding key comes on the same side as the shutter lever as in Fig. 1.

Fasten the camera together with the two metal catches. Press in the winding key, at the same time slowly turn it clockwise until you feel it engage in the spool inside the camera.

Continue turning the winding key slowly, at the same time watching the red window at the back of the camera, until No. 1 is visible. (The cover plate of the red window must, of course, be opened to see the figures on the film and closed again immediately the number is in position.) The film is now in position for the first picture to be taken.

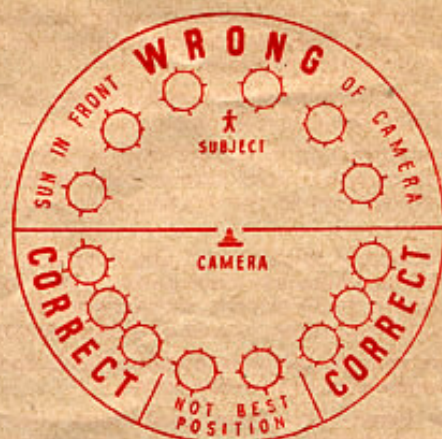
After taking the first photograph, turn the winding key until No. 2 is seen through the red window, and so on until the whole of the film has been exposed.

TAKING PHOTOGRAPHS

Always take your pictures with good sunshine on your subject, NOT SHINING INTO YOUR LENS.

The diagram on page 5 shows which are the best positions for the sun when taking photographs, and you should always try to keep the sun in one of these positions.

Focusing. Your camera is fitted with a pre-focused lens, so you do not have to worry about focusing, as this has been taken care of in the mounting of the lens, with the result that everything is in sharp focus from 10 ft. to infinity.



SUN BEHIND CAMERA

Make certain that what you are photographing is centred in the viewfinder. And look into the viewfinder from directly over it, not at an angle.

What you see in the viewfinder will appear in the picture. Never tilt the camera up in order to photograph the top of a high building. If you do, the building will appear to be leaning backwards in your photograph.

Hold the camera steady and gently press the shutter lever with the thumb of the right hand.

The lever will return automatically to its position, leaving the shutter set for the next exposure. Immediately you have taken a picture, turn the film to the next number. This will prevent two exposures being made on the same negative.

K100



CENTON

Time Exposures. If you want to take a photograph indoors, or out of doors when the sun is not shining, you must give a time exposure.

To do this, you must first pull out the Time Slide (see Fig. 1) as far as it will come.

Rest the camera on something solid, such as a chair or table, wall or gate. Take care to place it near to the edge of the support so that no part of it is included in the picture.

Press down the shutter lever, and hold it down until the correct exposure has been given. (This may vary from $\frac{1}{2}$ second to 30 seconds according to the subject.) Then gently release the lever to close the shutter again.

Be sure to press the Time Exposure Slide back again before commencing to take Snapshots.

Colour Filter. To obtain good cloud effects, or a truer tone rendering, when taking pictures of landscapes or seascapes, etc., use the Colour Filter, which is brought into action by pulling out to its full extent the lever on the side of the camera. The Filter should only be used when there is very bright sunshine, and should not be employed when taking portraits of people.

UNLOADING YOUR CAMERA

This camera can be unloaded in daylight but to avoid any possibility of fogging the edges of the film you must avoid direct light and do the unloading either indoors or in an out-of-the-way corner, or in the shade.

After the last picture has been taken, continue to turn the winding key until the end of the red paper has passed the red window.

Open the camera as already explained.

Remove the exposed spool of film, taking care that the paper does not loosen on the spool while you are doing so.

A gummed slip will be found attached to the end of the red paper. Moisten it, and then stick the red paper down with it. (It is best to fold under about half-an-inch of the red paper before moistening the slip.)

The film is now ready for developing either by your local photographic dealer or by yourself.

Transfer the empty spool to the top spool holder, taking great care to see that the slotted end of the spool is against the cut-out in the spool holder. (Otherwise the winding key will not be able to engage the spool.)

Reload the camera with a fresh spool of film as already described.

PITFALLS TO AVOID

Do not attempt to take "Snapshots" indoors, nor in very shady places, nor on dark days; you will only waste your time, your film, and your patience.

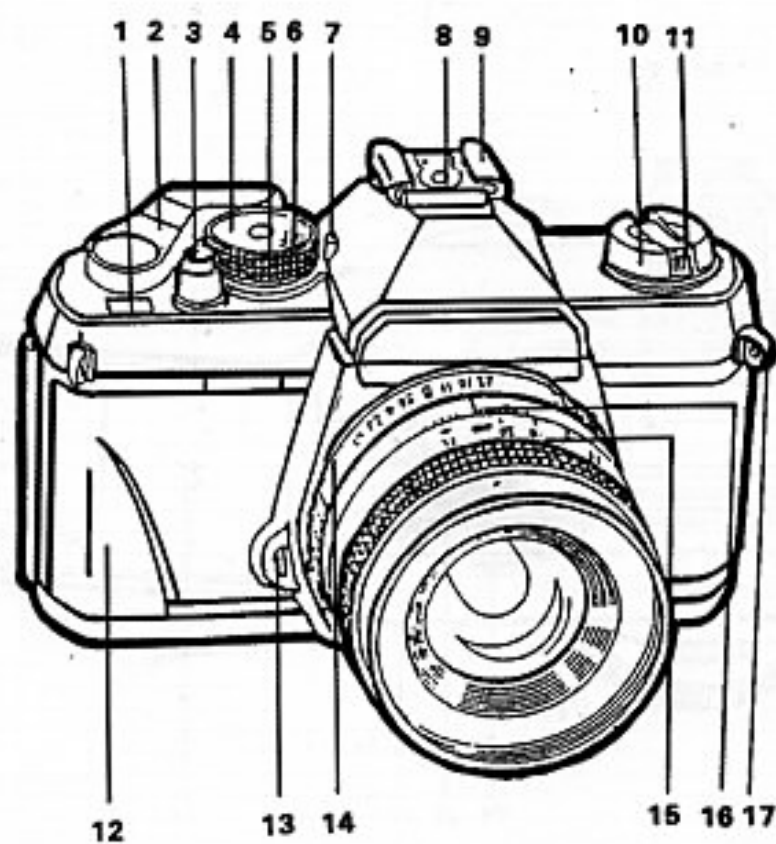
For this type of picture use a "Time" exposure.

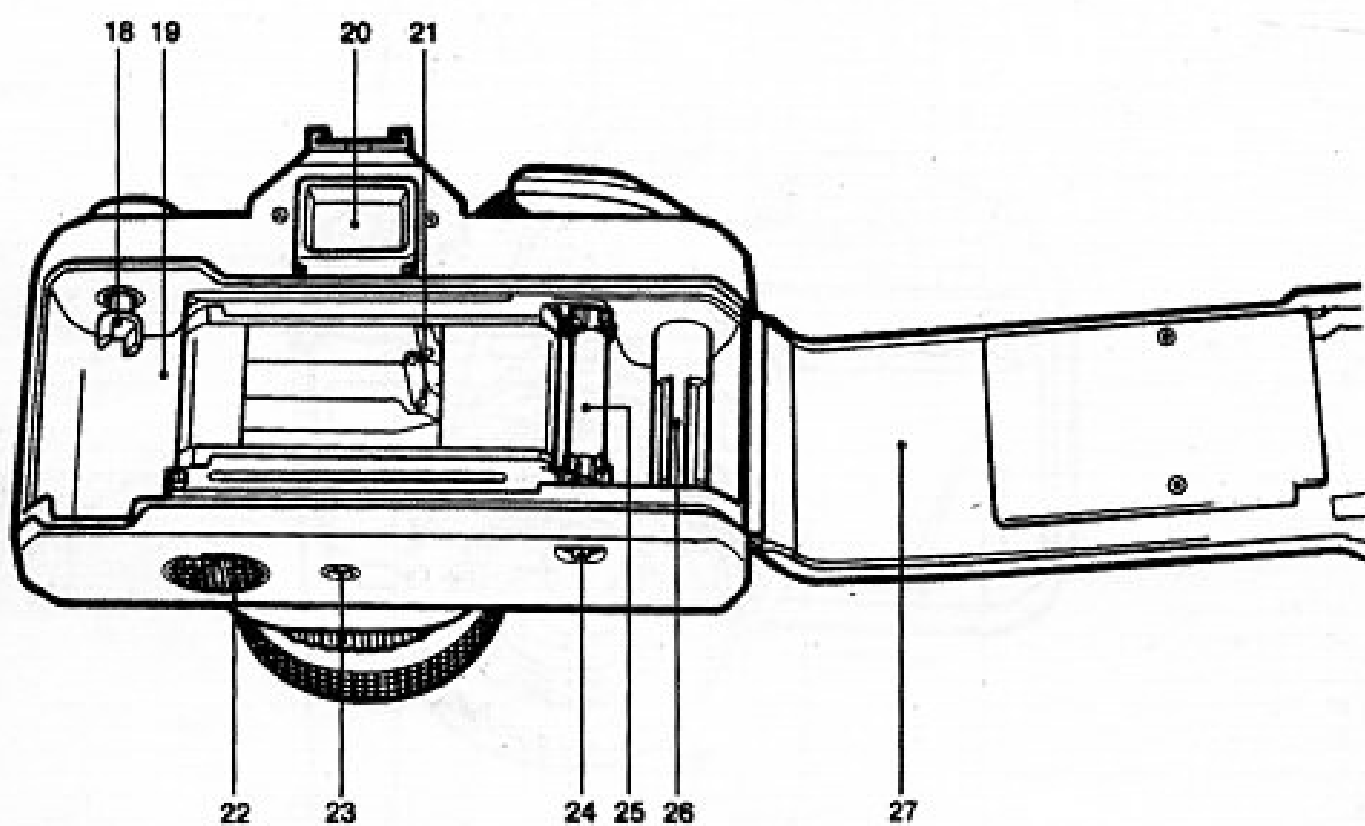
Do not leave the camera about in the glaring sun for any length of time.

Do not let seaside sand or dirt get into the camera, or you will have the shutter stick.

DEVELOPING AND PRINTING

Any Chemist or Photographic Dealer will develop your film and make the necessary prints for you at a moderate charge.





Description of Parts

1. Exposure Counter
2. Film Advance Lever
3. Shutter Release Button
4. Shutter Speed Dial
5. Film Speed Ring
6. Off (Shutter Lock)
7. Shutter Speed Index
8. Flash Contact
9. Flash Accessory Shoe
10. Film Rewind knob
11. Film Rewind Crank
12. Grip
13. Lens Release Button
14. Aperture Ring
15. Focusing Ring
16. Aperture/Distance Index
/Depth of Field Scale
17. Strapholder
18. Film Rewind Stud
19. Film Chamber
20. Viewfinder Eyepiece
21. Shutter Curtain
22. Battery Compartment Cover

23. Tripod Socket
24. Film Rewind Release Button
25. Sprocket Wheel
26. Film Take-up Spool
27. Camera Back

Mounting and Removing the Lens

Mounting the Lens

Remove the camera body cap by turning it counter-clockwise. Align the red dot on the lens barrel with the Lens Mounting Index on the camera body and turn it clockwise until it locks in place with a click.

Removing the lens

Press in the Lens Release Button and turn the lens counter-clockwise as far as it will go, then pull it out toward the front. Once the lens has been removed, be sure to put the lens front cap and rear cap on the lens and the body cap on the camera's lens mount to protect them.

● Do not touch the lens glass or the inside of The Camera.

Always change the lens in subdued light if there is film in the camera.

Battery Installation

Two 1.5V alkaline batteries (LR44), 1.55V silver - oxide batteries (SR44/10L14) or one lithium DL1/3N are needed to provide power for the camera's exposure meter and shutter speeds.

1. Remove the Battery Compartment Cover by turning it counter - clockwise with a coin.
2. Insert the battery/batteries inside the battery holder with the plus(+) side facing up. Then replace the holder in the compartment and tighten its cover.

Battery Check

Check the batteries with the LEDs in the viewfinder. If an LED (red or green) turns on when the Shutter Release Button is pressed halfway in, the batteries are in good condition. If no LED turns on, they are exhausted and must be replaced. Be sure to replace the two batteries at the same time. The batteries are used to power the exposure meter and shutter timing but the camera will continue to operate at 1/1,000 sec only if they are exhausted or there are

no batteries in it.

Film Loading

Use 35mm cassette film. Always load and unload film in subdued light, never in direct sunlight.

1. Open the Camera Back by pulling the Film Rewind Knob all the way out.
2. Install the cassette in the film chamber and push down the Film Rewind Knob. If it does not return smoothly to its original position, push it down while twisting it back and forth.
3. Pull out the film tip and insert it into any one of the slots in the Film Take - Up Spool.
4. Operate the Film Advance Lever slowly to advance the film. Make sure the Sprocket teeth catch the perforations, and close the Camera Back.
5. Fold out the Film Rewind Crank and turn it gently in the direction of the arrow to take up film slack.
6. Wind the Film Advance Lever and depress the Shutter Release Button. Repeat this operation until the Exposure Counter shows "1". The film is advancing properly if the Film Rewind Knob turns while you wind the Film Advance Lever.

Film Advance Lever

By turning the Film Advance Lever as far as it will go,

Exposure Counter

Setting the Film Speed

The ISO speed settings on the Film Speed Ring are as follows:



Focusing with the Solit-Image

Turn the Focusing Ring until your subject in the microprism collar or the matte screen appears sharp. It is not in sharp focus if the image appears wavy on the microprism or blurred on the matte screen.

Setting the Shutter Speed

The shutter speed not only controls the amount of light but can freeze or emphasize moving subjects. High shutter speeds (e.g. 1/500–1/1,000 sec) allow you to freeze a moving subject and slow shutter speeds (e.g. 1/2 – 1 sec) can be used to produce a sense of motion.

The numbers "1", "2" ... "1000" on the dial represent 1, 1/2 ... 1/1000 second, and the letter "B" stands for 'bulb', used for long exposures as explained below. To set the shutter speed, turn the Shutter Speed Dial and set the number you want opposite the index. Be sure to set it at a click position.

Bulb Exposure Photography

If an exposure time longer than 1 second is required, set the Shutter Speed Dial to "B". The Shutter will remain open as long as the Shutter Release Button is depressed. To prevent camera shake, mount the camera on a tripod and trip the shutter with a cable release (optional).

Setting the Aperture

The aperture controls the amount of light that reaches the film. If the Aperture Ring is turned to a one - step higher number (from 4 to 5.6, for example), the amount of exposure will be reduced by half; if it is turned to a one - step lower number, the amount of exposure will be doubled. The aperture not only controls the amount of light but also allows you to control the sharpness of areas in front of and behind the subject, as explained later in the section "Depth of Field". To set the aperture, turn the ring and set the number you want (with a click) opposite the Aperture / Distance Index.

Intermediate settings can also be used.

Exposure Setting

Your camera features a center - weighted metering system which measures the light intensity with emphasis on the subject in the center of the viewfinder. It also measures the brightness in the surrounding area.

The camera operates on manual exposure. First, set the film speed. You can then use any appropriate combination of shutter speed and aperture to obtain the correct exposure. If you press the Shutter Release Button halfway in, the exposure meter will switch on and an LED will turn on in the viewfinder to indicate the exposure. The LED will turn off as soon as you take your finger off the button.

As the exposure meter is based on a center - weighted system, always place your subject in the center of the viewfinder for light metering.

Correct Exposure

The green circle LED turns on (if the green LED and a red + or - LED turn on at the same time, it

means slight over – or underexposure, but you can go ahead and shoot). If you are using a shutter speed of 1/30 sec. or slower, mount the camera on a tripod to prevent camera shake or use flash photography instead.

Overexposure

Only the red + LED turns on. This means your subject is too bright. Stop down the aperture (i. e. set a higher number) or use a faster shutter speed to turn on the green LED.

Underexposure

Only the red – LED turns on. This means your subject is too dark. Open up the aperture (set lower number) or use a slower shutter speed to turn on the green LED.

Taking Pictures

1. Set the shutter speed and aperture
Turn the Shutter Speed Dial and Aperture Ring to set your desired values.
2. Focus the lens and frame your subject.
While looking through the viewfinder, turn the Focusing Ring to focus and compose your picture.
3. Check the exposure and shoot.

Press the Shutter Release button halfway in and check if the green LED turns on in the viewfinder. If it turns on, take your picture by pressing the Shutter Release Button all the way in.

Film Rewinding

When you reach the end of the film, the Film Advance Lever will no longer operate. Do not force it. Check the Exposure Counter to make sure the end of the film is reached. Rewind the film back into its cassette and unload the cassette. Send the exposed film for processing as soon as possible.

To rewind the film:

1. Press in the Rewind Release Button located on the camera bottom. The button will stay depressed.
2. Fold out the Film Rewind Crank (taking care not to open the camera back) and turn it in the direction of the arrow. Stop winding after you feel a sudden release of tension, then open the Camera Back and take out the cassette.

Exposure Compensation

If there is a significant difference in brightness between the main subject and its background, you will

not be able to get a correct exposure in the normal metering procedure. In this case, exposure compensation is necessary as described as follows:

Taking Backlighted Subjects

If you are taking a backlighted subject, or if a bright background occupies a large area of the picture frame (e.g. portraits with a bright sky or sea in the background, subjects standing against a window, etc.), your subject will turn out underexposed and dark. In such cases, give twice or four times as much exposure so that it is correctly exposed.

Example:

If the camera's exposure meter indicates $f/16$ and $1/250$ sec. to get correct exposure, make compensation as follows:

Compensation with the Aperture Ring

For 2 x exposure compensation, turn the ring from $f/16$ to $f/11$, and for 4 x compensation turn it to $f/8$.

Compensation with the Shutter Speed Dial

For 2 x exposure compensation, turn the dial from $1/250$ sec. to $1/125$ sec. and for 4 x compensation to $1/60$.

Taking Spotlighted Subjects

If a dark background occupies a large area of the picture frame (e.g. spotlighted subjects on a stage), your subject will turn out overexposed and light. In such cases, reduce the amount of exposure to half or one - fourth so that it is correctly exposed.

Example:

If the camera's exposure meter indicates $f/4$ and $1/60$ sec. to get correct exposure, make compensation as follows:

Compensation with the Aperture Ring

For 1/2 x exposure compensation, turn the ring from $f/4$ to $f/5.6$, and for 1/4 x compensation turn it to $f/8$.

Compensation with the Shutter Speed Dial

For 1/2 x exposure compensation, turn the dial from $1/60$ sec. to $1/125$ sec. and for 1/4 x compensation to $1/250$.

Main Switch

When the camera is not in use, turn the main switch on the Shutter Speed Dial to "OFF", to prevent accidental battery consumption (The remaining stops on Shutter Speed Dial Plate equal to "ON" condition).

Flash Photography

If you are taking indoor or nighttime pictures, use a flash unit. The camera has an X-contact hotshoe which allows flash synchronization at shutter speeds of 1/60 sec. or slower. You can use most types of cordless electronic flash units. Do not use shutter speeds faster or above 1/60th sec. when using a flash unit.

Depth of Field

When the lens is focused on a subject, the zone of sharpness also extends over a certain distance in front of and behind the subject. This is known as the depth of field of a lens and varies as follows:

1. The smaller the aperture, the greater the depth of field; and vice versa.
2. The longer the camera-to-subject distance, the

greater the depth of field, and vice versa.

3. The zone of sharpness behind the point the lens is focused on is greater than that in front of it.
4. A lens with a shorter focal length has a greater depth of field than one with a longer focal length.

Depth of Field Scale

You can check the zone of sharpness on the Depth of Field Scale of your lens. If you are using a 50mm normal lens and have set the distance at 5m and aperture at 1/16, you will see on the Depth of Field Scale that the zone of sharpness extends from about 2.7 m to infinity (indicated by the corresponding 1/16 either side of the Aperture/Distance Index mark).

Camera Care

- Do not leave the camera in a hot place (e.g. in direct sunlight, in a closed car, etc.) for too long a time. Excessive heat may adversely affect the film, batteries or camera mechanism. If the camera has become too hot, allow it to cool to a normal temperature before use.
- After shooting seaside scenes, clean the camera very carefully. Sea breezes may cause corrosion of the camera mechanism.

Accessories



" CORO - FLASH " GUN

12/6

Inc. P.T.

With this Gun you can take marvellous snaps—indoors!—at home—at the 'local'—at the club—at dances. Anywhere! Anytime!

For better "snaps" use a "Coronet" Lens Hood and get clearer, crisper pictures.

For subjects nearer than 9 ft. use a "Coronet" Close-up Lens.

WALLET CONTAINING LENS HOOD AND CLOSE-UP LENS ... 7/6d.

COLOUR FILTER (For Cloud Effects) TO FIT LENS HOOD ... 6/6d.

EVER-READY CARRYING SLING FOR CAMERA ... 7/6d.

Use "Coronet" Coro-Chrome Film

14283

INSTRUCTIONS FOR USING THE CAMERA



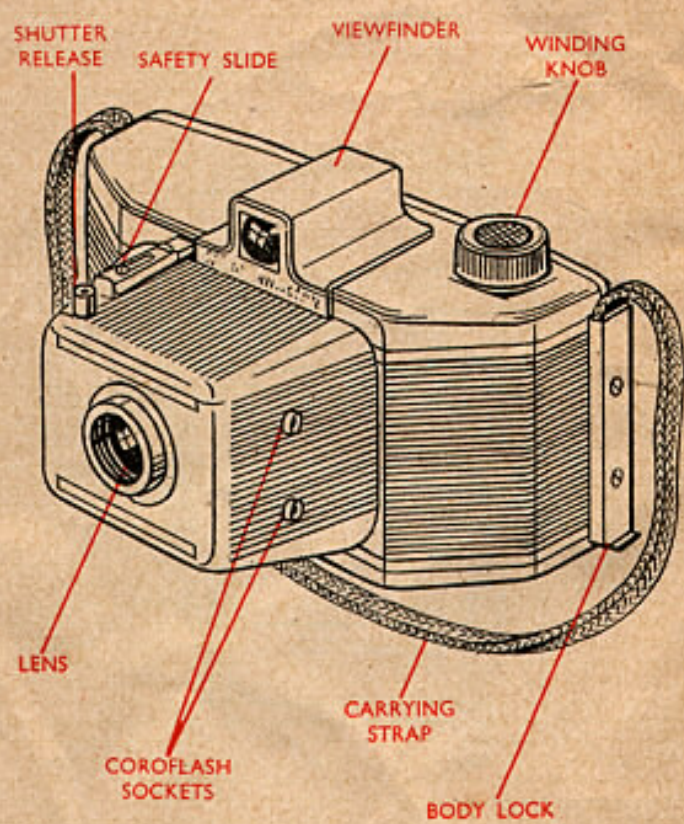
TAKES 12 PICTURES $2\frac{1}{4} \times 2\frac{1}{4}$ ins.
(6 x 6 cms.) ON SIZE 120 FILM



FM62/656

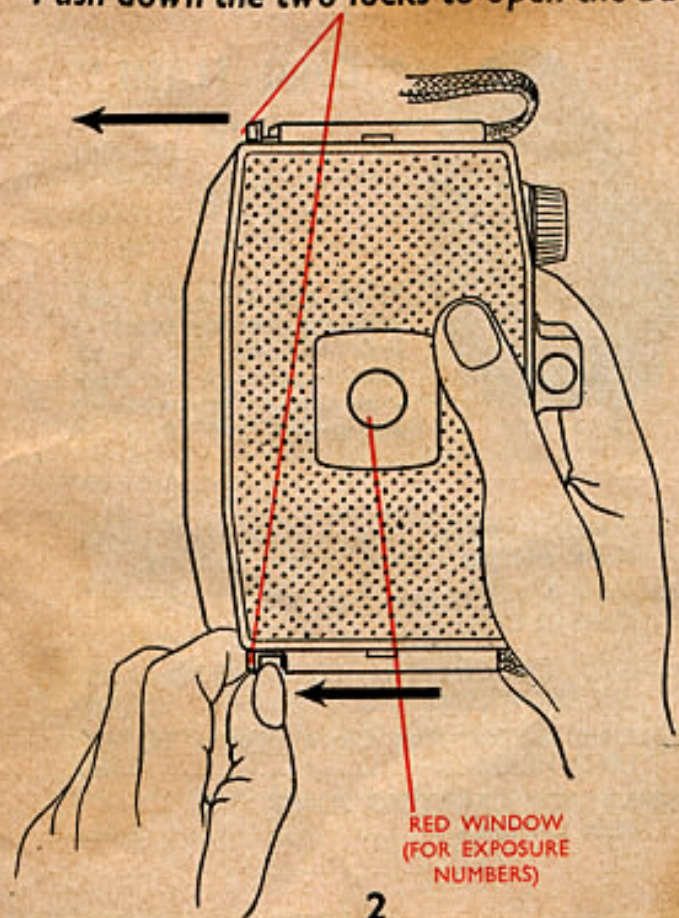
Printed in England

What's what on your Camera



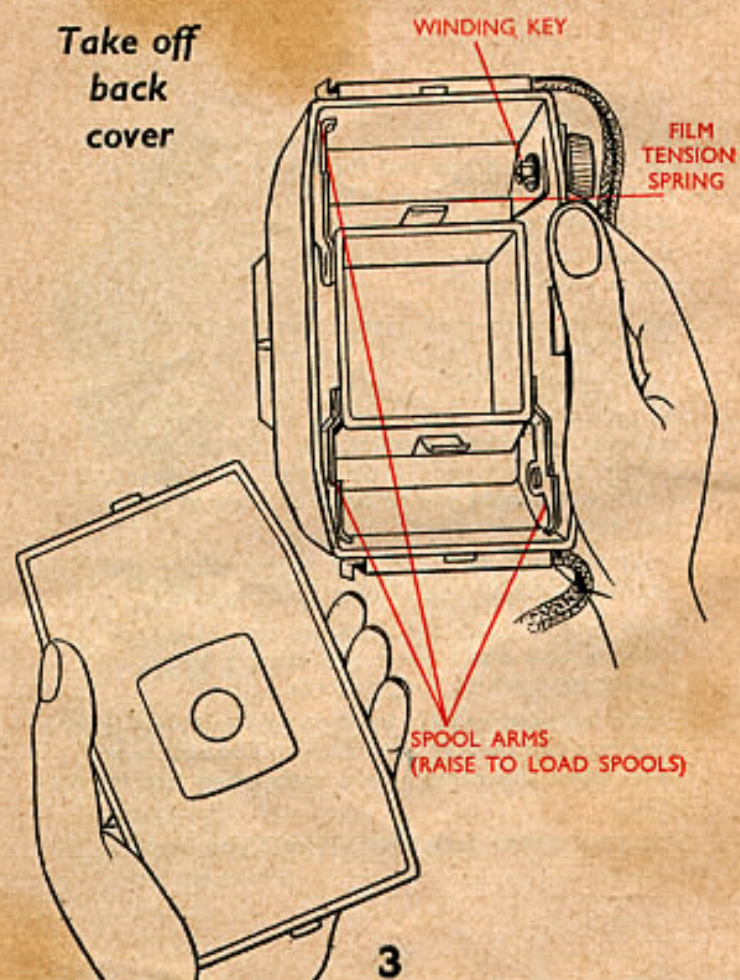
1

Push down the two locks to open the back

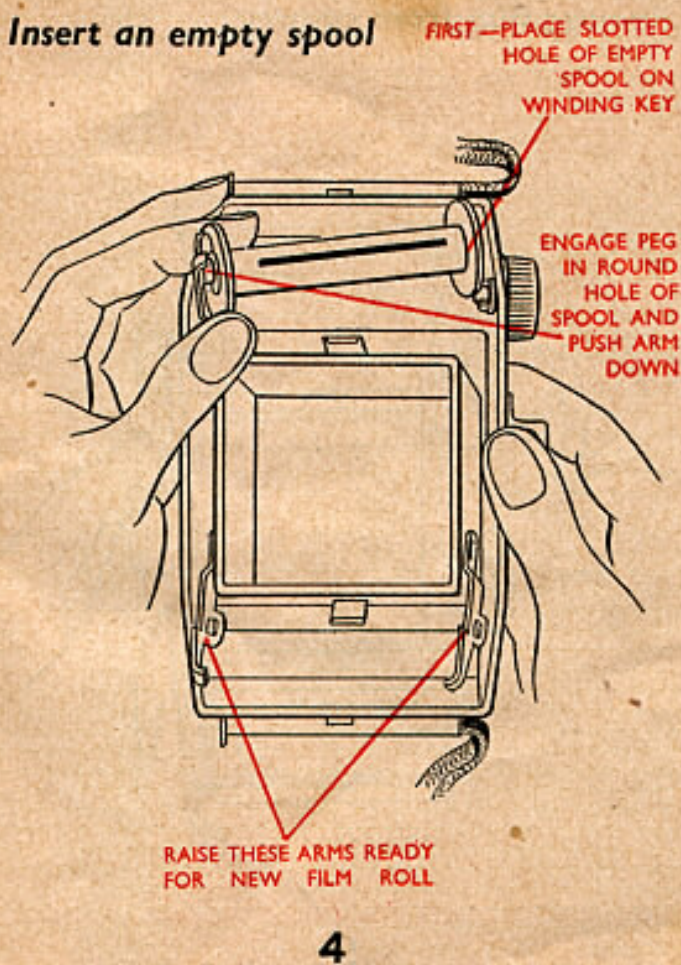


2

Take off
back
cover



Insert an empty spool



Load the film

FIRST.—PLACE FILM BETWEEN ARMS
AND PUSH THEM DOWN

THEN.—THREAD TONGUE
OF RED PAPER
INTO LONG SLOT
OF EMPTY SPOOL

TURN WINDING KEY ONCE OR
TWICE AND BE SURE FILM WINDS
EVENLY AND TRUE

5

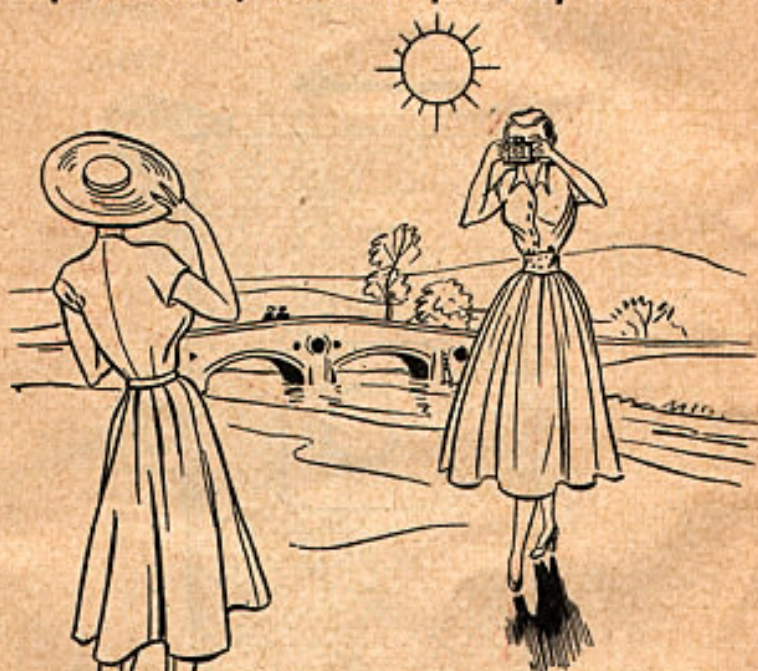
Replace and lock back

WIND
SLOWLY
UNTIL No. 1
APPEARS IN
RED
WINDOW

The camera is now ready
for your first picture

6

Compose picture with sun over right or left shoulder, never in front of camera



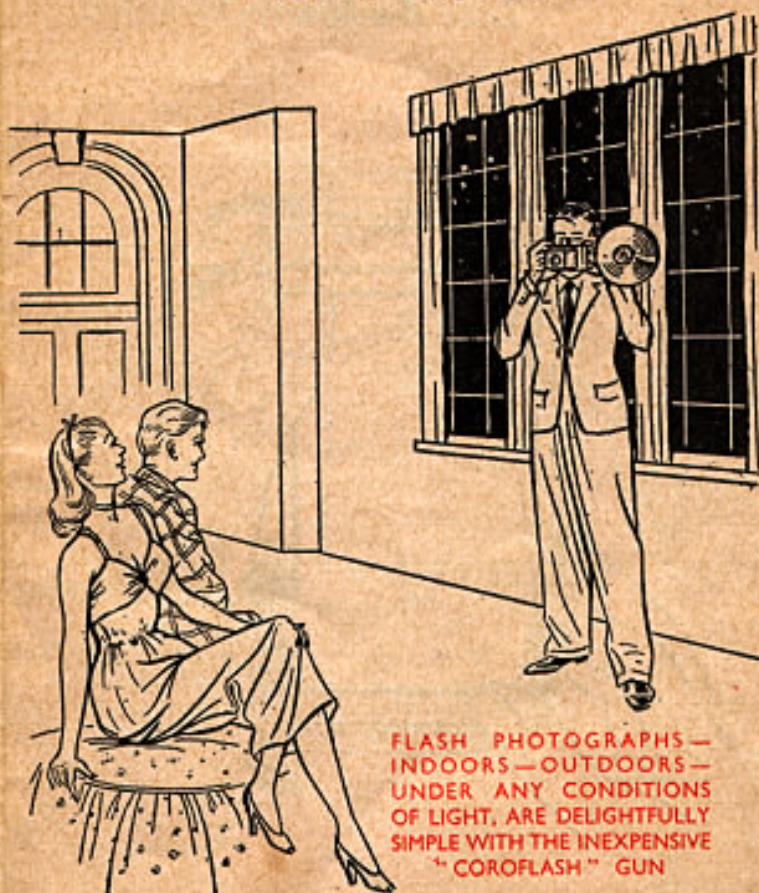
SQUEEZE SHUTTER RELEASE GENTLY

TURN ON IMMEDIATELY TO NEXT NUMBER

After 12th picture, wind film right off, open back and unload camera

7

Flashlight photographs

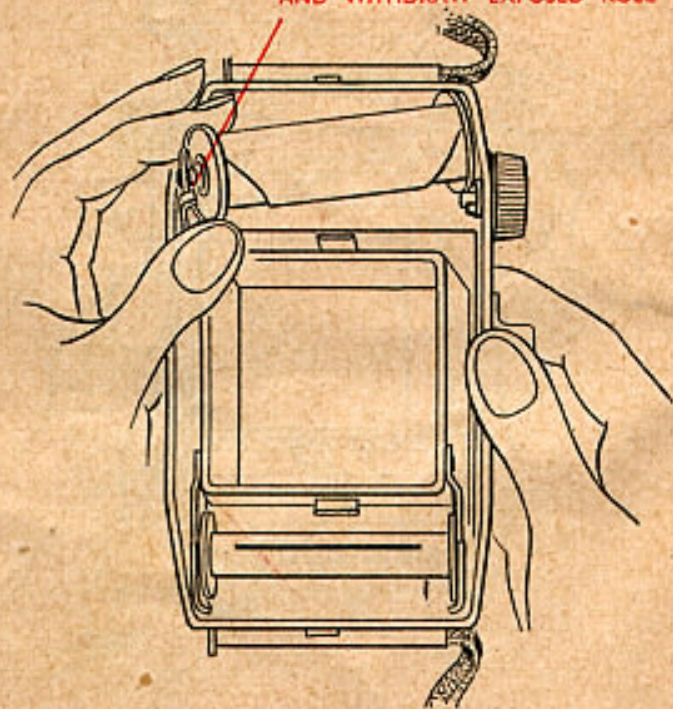


FLASH PHOTOGRAPHS—
INDOORS—OUTDOORS—
UNDER ANY CONDITIONS
OF LIGHT, ARE DELIGHTFULLY
SIMPLE WITH THE INEXPENSIVE
"COROFASH" GUN

8

Remove film from camera

TAKE OFF BACK—RAISE SPOOL ARM
AND WITHDRAW EXPOSED ROLL



TAKE FILM TO DEALER FOR DEVELOPING AND PRINTING

Points to Remember

The Safety Slide must be drawn back before taking a photograph and should be pushed forward again immediately afterwards to prevent accidental operation of the shutter.

Always take "snaps" in bright light with the sun at your back.

For pictures on dull days, or in shady places, or at night, or indoors, use the inexpensive "Coro-flash" Synchro Gun.

Be sure to stand at least three paces from your subject. To take portraits, ask your dealer to supply a "Coronet" "close-up" attachment, which will enable you to stand as close as three feet from your subject.

Hold the camera quite still when taking the picture—squeeze the shutter release gently.

Load and unload the film in the shade or indoors, and don't leave the camera about in glaring sunlight for long periods.

Don't let sand or dirt get into the camera—it may ruin the shutter mechanism. The best way is to keep the camera in a case when not in use.

Ask your photo dealer for advice if you need it.

EXAKTA RTL1000

The EXAKTA RTL 1000, maintaining the use of the world-renowned quick-change bayonet and offering plenty of valuable innovations to up-to-date miniature photography, continues the great traditions of this high-performance camera. These innovations are based on the well-approved principle of the true single-lens reflex camera with its always parallax-free correspondence of reflex image and photograph. These are the most important features of your EXAKTA RTL 1000:

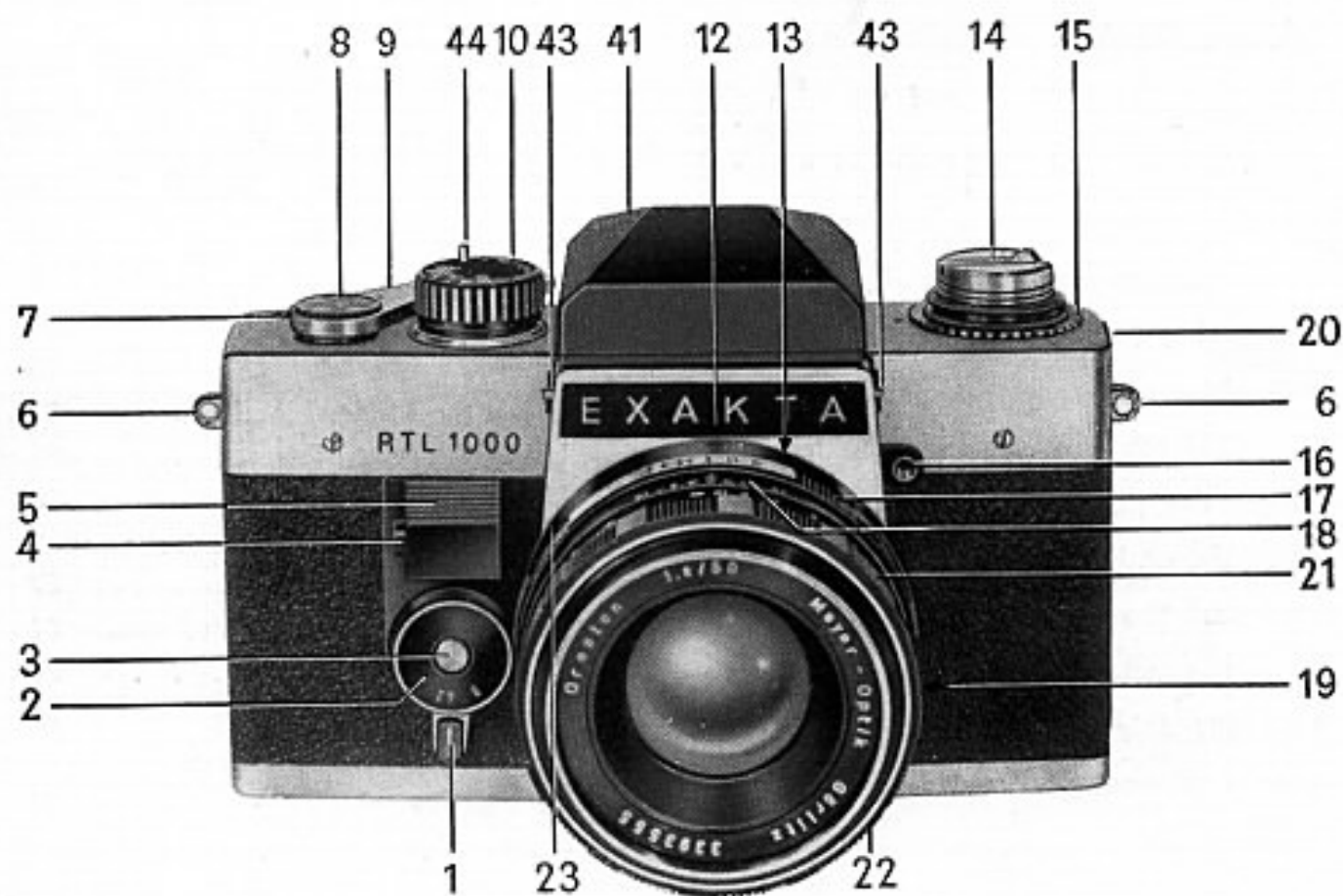
Simple arrangement of all operating controls. Interchangeable viewfinder systems: Finder Hood, Penta Prism, and TTL Penta Prism for the automatic exposure timing with internal measurement, the lens being stopped down or fully opened. Focal-plane shutter made of metal laminae and destined for the complete series of shutter speeds from 8 seconds to $\frac{1}{1000}$ second, 1 second to $\frac{1}{1000}$ second with built-in delayed-action release. B setting for any long shutter speeds. Right-hand and left-hand release. Quick tensioning with a 30° preliminary elevation for series of photographs. Instant return mirror. Synchronising switch for electronic flash units and flashbulbs; electronic flash units being synchronized with approximately $\frac{1}{125}$ second, fast-burning flashbulbs with $\frac{1}{30}$ second. Automatic film loading system with free selection of film. Frame counter automatically returning to its initial position. Rewind release catching in. Interchangeable lenses with original EXAKTA quickchange bayonet and automatic diaphragm mechanism with internal release. On the left-hand release there can be employed any earlier EXAKTA lenses with automatic diaphragm mechanism. Accessories for any field of application.

EXAKTA

RTL1000

INSTRUCTION MANUAL

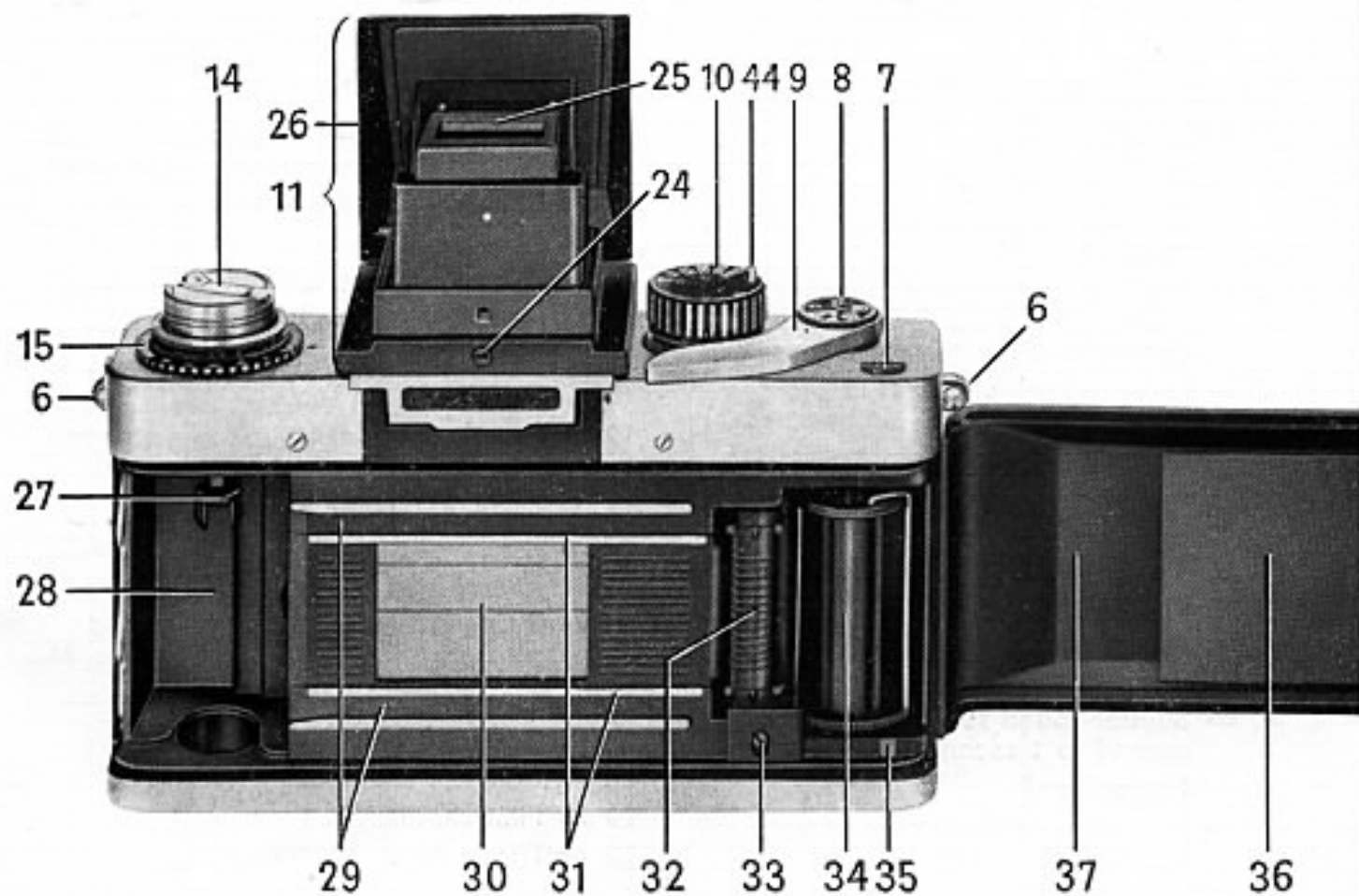




We are delighted that you have chosen an EXAKTA RTL 1000 and we wish you every success with your new camera. We would like to advise you, however, to read this instruction manual carefully before you start using your camera. In this way you will obtain the greatest possible service from it, since you will eliminate from the outset the possibility of operating it incorrectly, and possibly damaging the mechanism. The EXAKTA RTL 1000 is a high-quality precision instrument which can naturally only be expected to answer all your requirements when it is always handled correctly.

Contents

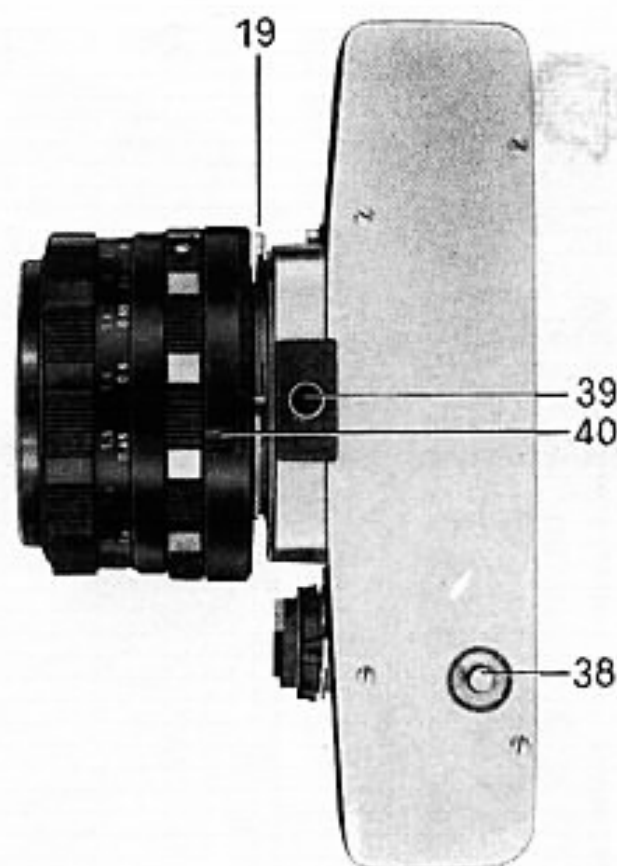
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Operating controls of the EXAKTA RTL 1000

- | | |
|--|--|
| 1 = Tensioning lever of mechanism for low shutter speeds | 13 = Red aligning dot on the lens (for lens changing) |
| 2 = Shutter-speed setting knob for 2 seconds to 8 seconds (mechanism for low shutter speeds) | 14 = Rewind crank with knob and fixture for attaching the accessory shoe |
| 3 = Release knob of preset timing mechanism (relayed-action release) | 15 = Film-sensitivity reminder ring |
| 4 = Release lock on the right-hand release | 16 = Left-hand release (with connection for cable release) |
| 5 = Right-hand release | 17 = Aperture-setting ring |
| 6 = Eyelets for carrying strap or cord | 18 = Depth-of-field scale |
| 7 = Frame counter | 19 = Lens locking lever |
| 8 = Film-type reminder disc | 20 = Flash nipple |
| 9 = Rapid-wind lever | 21 = Distance-setting ring |
| 10 = Shutter-speed setting knob for $\frac{1}{1000}$ second to 1 second and B setting | 22 = Lens |
| 11 = Finder hood | 23 = Knob for stopping down the lens |
| 12 = Red aligning dot on the camera (for lens changing) | 24 = Knob for opening the finder hood |
| | 25 = (Swing-up) focusing magnifier |
| | 26 = Cover of finder hood |
| | 27 = Rewind arbor (with carrier) |
| | 28 = Cassette chamber |
| | 29 = Film channel |
| | 30 = Film gate |

- 31 = Film-guide runners
- 32 = Film-wind sprocket
- 33 = Film rest
- 34 = Take-up spool (with catch bows)
- 35 = Mark
- 36 = Film-pressure plate
- 37 = Camera back (hinged)
- 38 = Rewind declutching button
- 39 = Tripod thread
- 40 = Diaphragm switch (for disengaging the automatic diaphragm mechanism)
- 41 = Penta Prism
- 42 = Eyepiece of Penta Prism
- 43 = Unlocking knobs for the viewfinder system
- 44 = Driver pin for the coupling of the TTL Penta Prism (page 26)



- Remove dust and dirt on the lens and viewfinder eyepiece with a soft lens brush or blower brush. Remove fingermarks by wiping off lightly with lens tissue. In case the mirror is soiled, dust off lightly with a lens brush. Always take extra care to avoid scratches.
- Do not subject the camera to a abrupt temperature changes, because moisture can condense inside the camera and cause faulty electrical contact.
- To clean the camera body, wipe with a soft cloth. Never use benzine, thinner or other solvents.
- If you are not likely to use the camera for an extended period of time, remove the batteries and store away from heat and moisture.
- If you take your camera on a trip or to special events, be sure to check beforehand that it functions normally.
- Keep in mind that the picture area on a certain sizes of print may be slightly smaller than that

of the negative.

Battery Precautions

- Generally, battery performance decreases temporarily at low temperatures (under about 0°C/32°F). When taking pictures in cold weather, it is recommended to use new batteries and keep a spare set in a warm pocket. The batteries affected by cold temperatures will function properly again when they return to normal temperature.
- Before installing the batteries, wipe both poles clean with a dry cloth. Poor contact may result if they are soiled.
- If you are taking your camera on a long trip, take spare batteries with you.
- Never put batteries into fire or try to disassemble, this is dangerous.

Specifications

Type: 35mm single lens reflex camera with focal plane shutter.

Negative Size: 24 x 36 mm.

Lens Mount: P/K.

Shutter: Vertically running focal plane shutter.

Shutter Speeds: B (bulb), 1 to 1/1000 sec. (12 steps).

Flash Synchronization: X contact hotshoe.
(synchronizes at 1/60 sec. or slower).

Shutter Release: Mechanical.

Exposure Metering: Through-the-lens, full-aperture, center-weighted light metering with SPD cell; manual exposure with LED display; metering range EV2 - 19 (with ISO 100 film and 50mm f/1.4 lens); ISO 25 - 1600 film speed range; exposure meter switch activated by pressing shutter release button halfway in.

Exposure Meter Power Source: Two 1.5V alkaline (LR44), 1.55V silver-oxide (SR44/10L14) or one DL1/3N lithium battery.

Viewfinder: Eye-level pentaprism finder; 92% field of view and 0.91 x magnification (with 50mm lens set at infinity).

Focusing Screen: Split-image/microprism.

Viewfinder Information: Display of correct exposure, over- and underexposure with 3 LEDs.

Film Advance: Lever with 130° stroke and 20° stand-off.

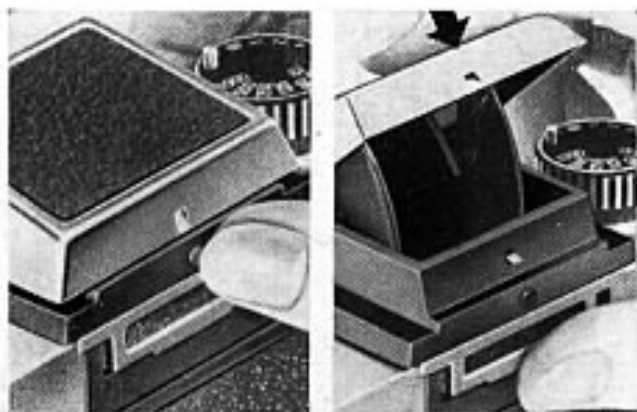
Film Rewind: Film rewind crank.

Exposure Counter: Additive, auto reset.

Dimension: 136 (W) x 87 (H) x 54 (D) mm.

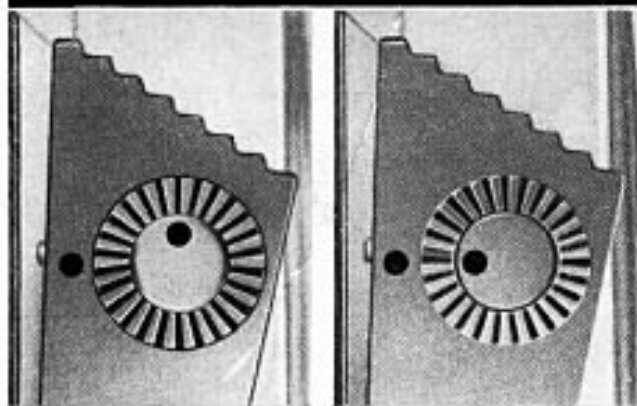
Weight: 434 g (without batteries).

Specifications and design subject to change without notice.



Preparations for use

The Finder Hood (11) is opened by pressing on the knob (24). To close the hood, press the cover of the Finder Hood (26) backwards until it locks in position. The focusing magnifier (25) can be swung either forward into the position of rest in the cover of the Finder Hood (26) or backwards into the working position. For further information on the use of the Finder Hood see page 22.

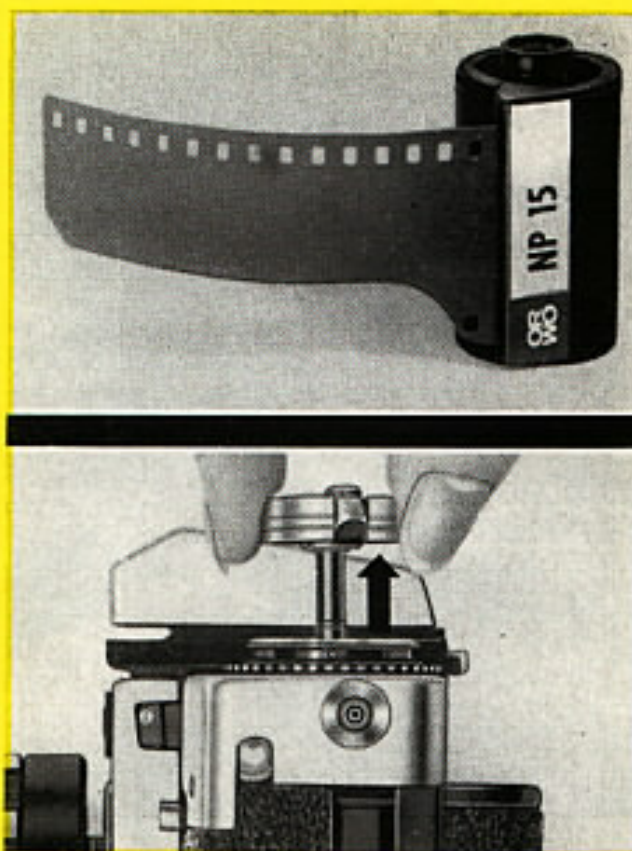


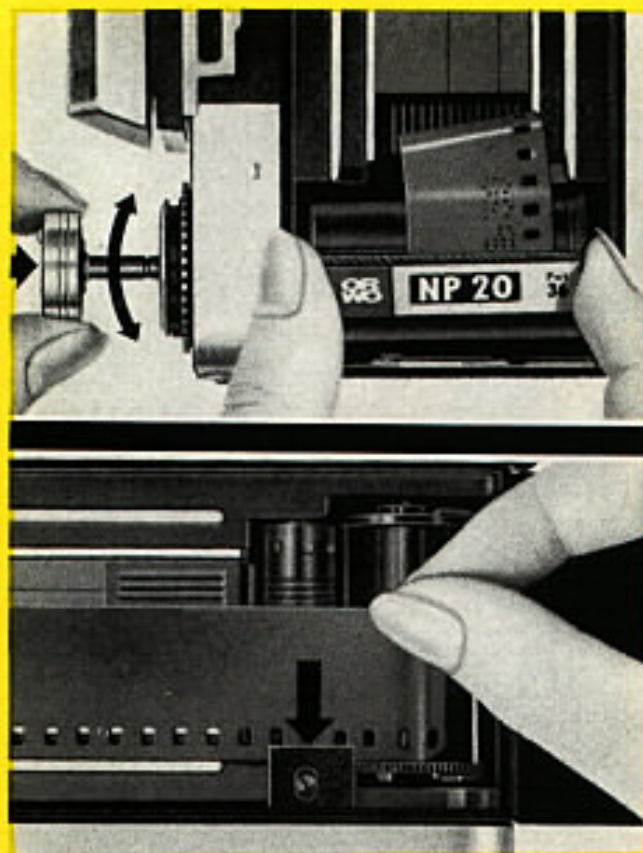
Swing the release lock (4) to the stop on the right (marking dots are staggered): the shutter can be released by pressing on the right-hand release (5). When you have finished taking pictures, swing the release lock (4) to the stop on the left (the marking dots are opposite each other): now it will be impossible to release the shutter, which means protection against unintentional exposures. (No locking in case of the left-hand release (16).)

Film loading

Loading and changing the film must not take place in direct sunlight! – The EXAKTA RTL 1000 uses standard 35 mm miniature film, in standardized, commercial cassettes of 12, 20 or 36 exposures, to make negatives 24 mm x 36 mm the beginning of the film having a shape according to the illustration. Perfect film transport requires faultless film cassettes. Daylight loading spools should only be inserted in capsules made by the same manufacturers.

1. Pull out the knob of the rewind crank (14) as far as the second stop: now the camera back (37) will open.



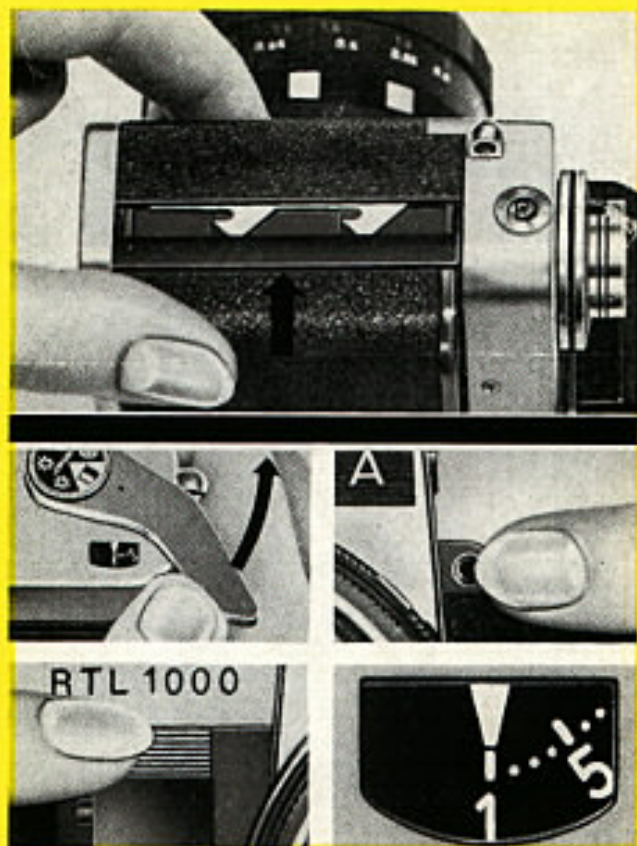


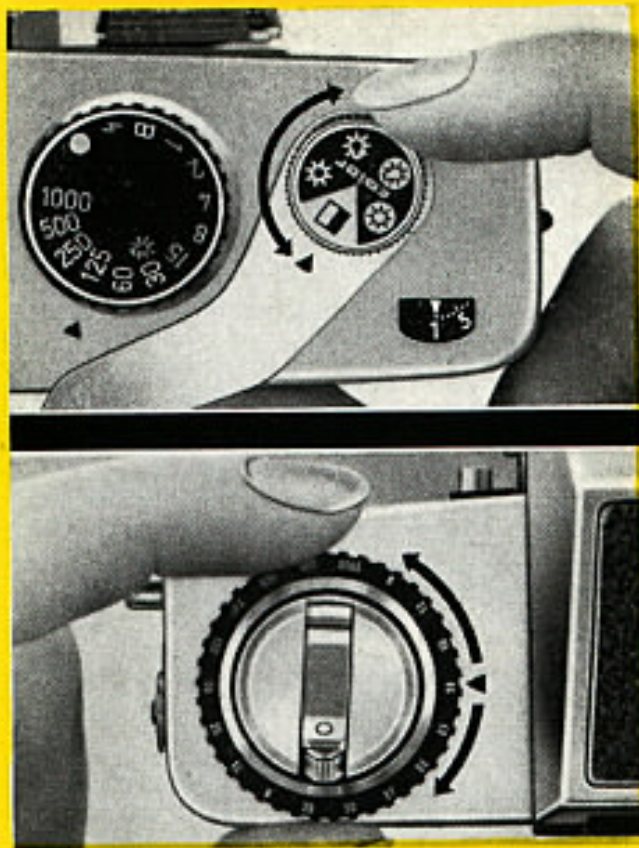
2. Place the cassette containing the unexposed film in the cassette chamber (28). Push the knob of the rewind crank (14) backwards, twisting it gently: the carrier of the rewind arbor (27) must engage with the cassette core.

3. Pull the beginning of the film (29) as far as the green mark (35), and push it with its (lower) perforation from above under the film rest (33) and, accordingly, over the film-wind sprocket (32). The catch bow of the take-up spool (34) must not stand upwards!

4. Closing camera back (37) by pressing it lightly home, the locking taking place automatically.

5. Now swing the rapid-wind lever (9) right up to its stop and let it return. Release the shutter by means of the right-hand release (5) or by means of the left-hand release (16). Repeat these operations until the figure "1" in the automatic frame counter (7) will be below the mark.





6. A special setting of the frame counter is not necessary since the latter, springing automatically back as soon as the camera back is opened, will begin to operate when the camera back is closed. — Afterwards the frame counter will indicate the number of photographs already taken on the film placed in the camera.

7. When film is loaded, set the film-type reminder disc (8) and the film-sensitivity reminder ring (15) as reminders of the type and sensitivity of the film that is in the camera. Turn the disc and the ring in either direction until the appropriate references will be opposite the orange-coloured triangles. On the film-sensitivity reminder disc (15) the figures from 9 to 33 are DIN values, whereas the figures from 6 to 1600 denote ASA values. The film-type symbols on the reminder disc (8) have the following meaning:

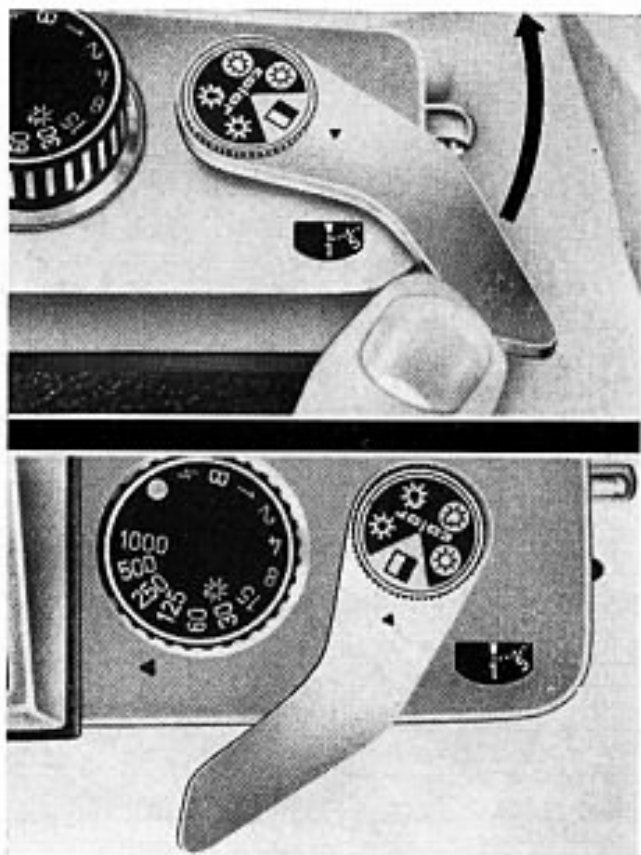
-  = black-and-white film
-  = reversible colour film for daylight
-  = reversible colour film for artificial light
-  = negative colour film for daylight
-  = negative colour film for artificial light

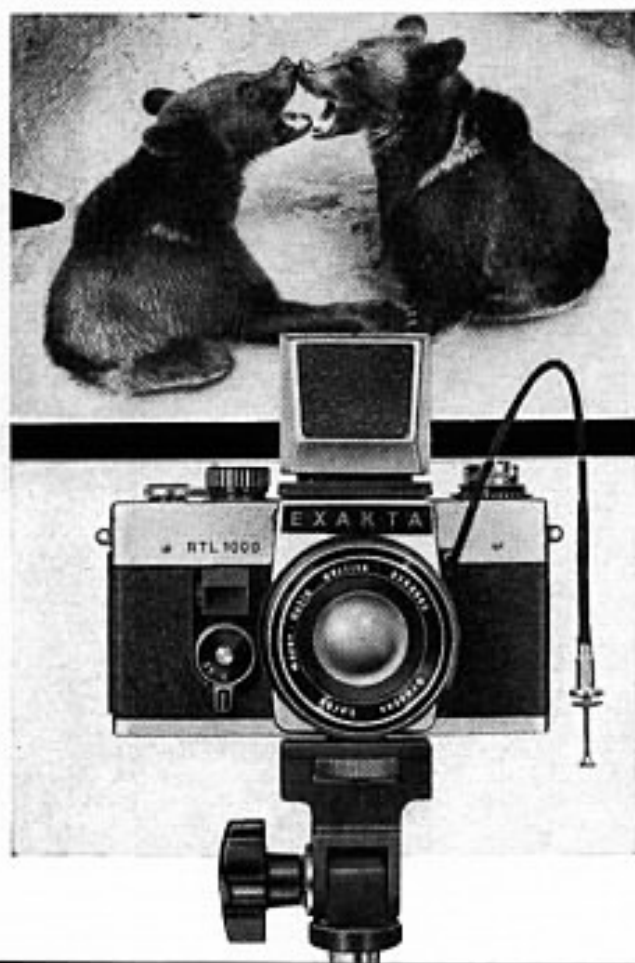
The EXAKTA RTL 1000 is now ready for action!

Operating the shutter

1. The shutter is tensioned and the film wound on by operating the rapid-wind lever (9). This lever should always be swung right up to its stop, and will then spring back of its own accord. — The tensioning of the shutter and the transportation of the film are coupled (avoiding unintentional double exposures and blank frames). It is impossible to release the shutter before it has been fully tensioned and the film wound on. It is also impossible to release the shutter in intermediate positions of the rapid-wind lever (9).

In order to enable users to work in quick succession (e. g. in case of series of photographs) the rapid-wind lever (9) can be employed with preliminary elevation: intermediate position at approximately 30° after the position of rest.





2. The image in any of the viewfinder systems (Finder Hood, Penta Prism, and TTL Penta Prism) will be visible even after the shutter has been released (instant return mirror). The red warning signal in the image in the viewfinder system indicates that the camera is not yet ready for action, and that the rapid-wind lever (9) must be cocked before the shutter is ready for release (See illustration: image seen through the Penta Prism).

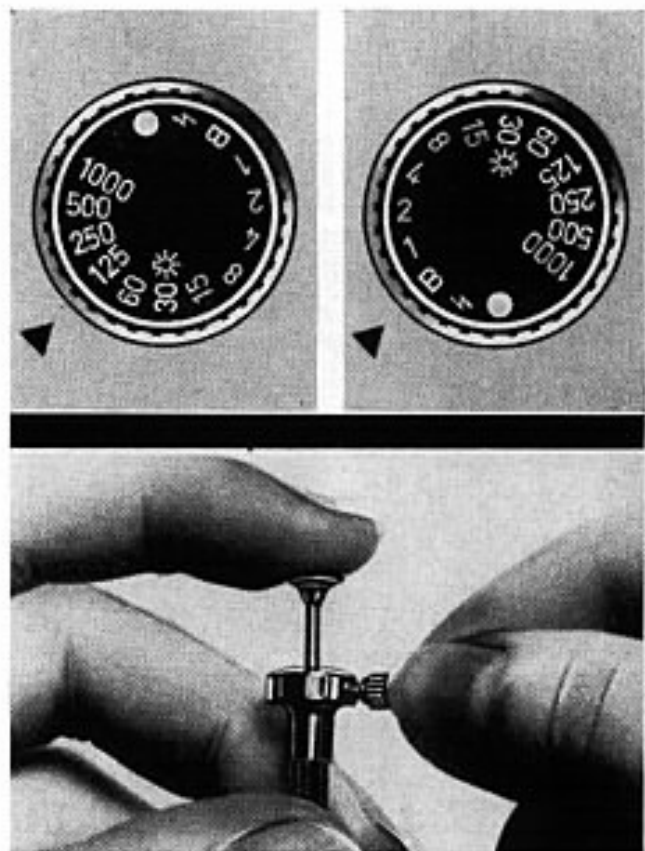
3. Setting the shutter speeds

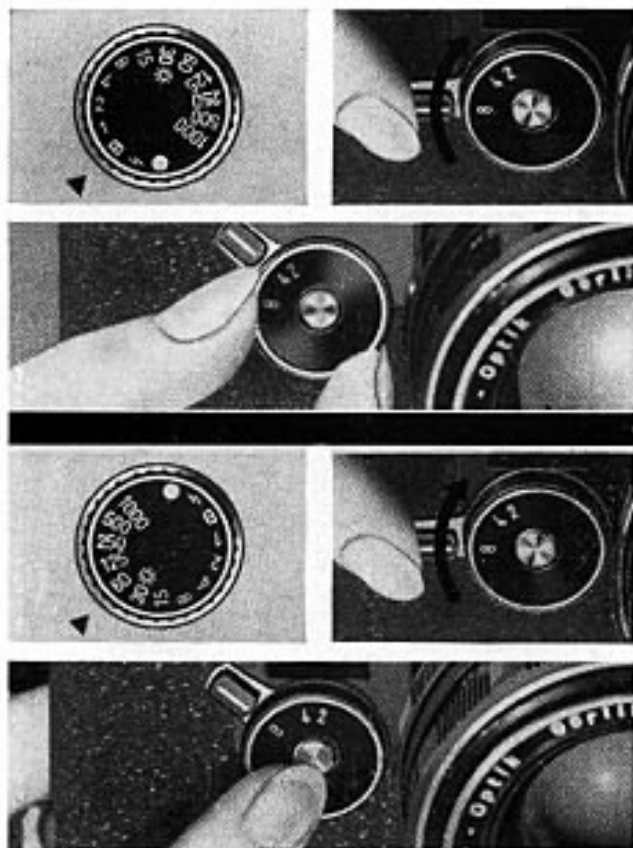
You will safely succeed in taking photographs with shutter speeds from 1/1000 second to 1/30 second (white figures on the shutter-speed setting knob (10)) „by hand“, i. e. without the use of a tripod. For any exposure times from 1/15 second to 1 second (orange-coloured figures on the shutter-speed setting knob (10)) and for still longer exposure times with the B setting, the camera should be screwed on to a tripod and a cable release be employed. Tripod thread (39) at the bottom of the EXAKTA RTL 1000, thread for the cable release in the left-hand release (16). All setting operations can be effected before and after tensioning the shutter.

Selection of exposure times from $\frac{1}{1000}$ sec. to 1 second and B setting

Turn the shutter-speed setting knob (10) until the desired figure or the B will be at the orange-coloured triangle. The figures from 2 to 1000 represent fractions of seconds (e. g. $\frac{1}{125}$ sec.). Intermediate speeds cannot be set. In case of the B setting the shutter will remain opened as long as the pressure on the right-hand release (5), on the left-hand release (16) or on a cable release screwed into the left-hand release (16) (important for exposure times longer than 8 seconds) continues. Accordingly, the B setting will permit any exposure times you like (e. g. for taking night and indoor exposures).

For working with the B setting a cable release with time-exposure lock can be recommended: After depressing the cable release, operate the time-exposure lock. The shutter will remain opened without having to keep one's finger constantly on the release (also eliminating camera shake) until the time-exposure lock is disengaged.





Selection of exposure times from 2 seconds to 8 seconds

Turn the shutter-speed setting knob (10) until the B is in line with the orange-coloured triangle. Swing the tensioning lever of the mechanism for low shutter speeds (1) in the clockwise direction to the stop. (This operation may be performed before or after tensioning the shutter). Turn the shutter-speed setting knob (2) of the mechanism for low shutter speeds until the desired exposure time (2 sec., 4 sec., or 8 sec.) will be opposite the mark on the tensioning lever of the mechanism for low shutter speeds (1). Release the shutter by means of the right-hand release (5) or of the left-hand release (16).

Selection of exposure times from $\frac{1}{1000}$ sec. to 1 sec. with delayed-action release

Turn the shutter-speed setting knob (10) until the desired exposure time will be opposite the orange-coloured triangle. Swing the tensioning lever of the mechanism for low shutter speeds (1) in the clockwise direction to the stop (= tension the preset timing mechanism; this operation may be performed before or after tensioning the shutter). Release the shutter only with the release knob of the preset timing mechanism (3). Exposure will take place after 8 seconds.

Operating the lens

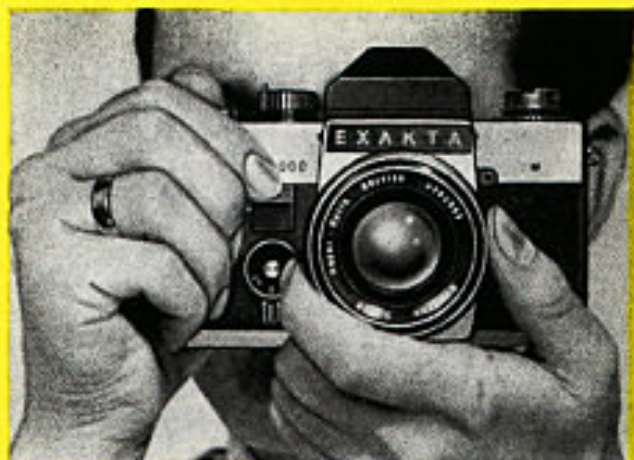
1. The lenses of the EXAKTA RTL 1000 are equipped with internal release of the fully-automatic pressure diaphragm. Select the desired aperture number by turning the aperture-setting ring (17): the desired aperture number must be opposite the orange-coloured triangle.

The smaller aperture numbers, e. g. f 1.8, 2, 2.8, 4 indicate relatively large diaphragm openings: these permit brief exposures, but give only shallow depth of field. The larger aperture numbers, e. g. 16, 22, indicate relatively small diaphragm openings requiring longer exposure times, but giving great depth of field. Further information on the depth of field will be found on page 19.



The lens is focused by turning the distance-setting ring (21) and by checking the definition of the image in the viewfinder system. After focusing, the correct camera-subject distance will be in line with the orange-coloured triangle. The lower values on the distance scale indicate metres, whilst the larger values possibly arranged above them represent feet. All distance are measured from the back of the camera to the subject.

Focusing for infra-red photography: When using infra-red film, first focus the image in the viewfinder system normally, then note the distance indicated by the orange-coloured triangle (either in feet or in metres or the infinity symbol), and turn the focusing ring to set this distance against the orange-coloured dot, the so-called infra-red setting mark which is to the right of the normal setting mark. By doing this, the image produced by the infra-red rays will be brought into sharp focus in the film plane of the camera and consequently will appear sharp in the negative.





Focusing with focusing system

(Fresnel screen) :

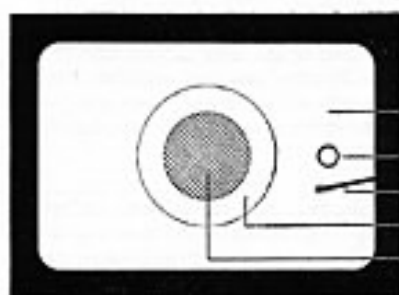


Image-
brightening
Fresnel screen
Circular mark
Pointer of mea-
suring device
Annular field in
the ground-
glass screen
Microprism

The EXAKTA RTL 1000 may optionally be supplied with a focusing system in all its viewfinder units. With this focusing system, a sharp image is mainly obtained using the annular field in the ground-glass screen (for moving subjects, photographs taken with a magnifier, and photomicrographs). To increase the accuracy of focusing or in case of slowly moving and stationary subjects focusing is performed by means of a microprism field. In case of incorrect focusing the microprism field will show an image which is blurred to a greater degree (the blurred image "flickers"). The lens will be correctly focused when the image in the microprism is at its sharpest (i. e. no flicker effect). It is however, absolutely necessary to focus with a large diaphragm opening (small aperture number) (this is important above all in case of lenses without internal release). With apertures

of 5.6 and smaller, the image in the microprism field will appear relatively sharp, even with the lens incorrectly focused. This, of course, will lead to unsatisfactory results. For extreme close-ups of magnifications greater than 1:1 and for photomicrography, the microprism cannot be used. The rest of the image in the viewfinder (Fresnel field) does not serve for focusing the lens.

Reading off the depth of field: When the depth of field is great, objects at widely varying distances from the camera will form a sharp image. After focusing the precise extent of this sharp zone will be indicated by the depth-of-field scale (18) on the lens: on either side of the orange-coloured setting mark (triangle) you can read off from the distance scale where the depth-of-field zone begins and ends for any specific aperture setting. If the relevant aperture number on one side of the central distance-setting mark is in line with the infinity symbol (∞) or ∞ beginning from the centre — even beyond it, then the depth of field will extend right up to infinity.

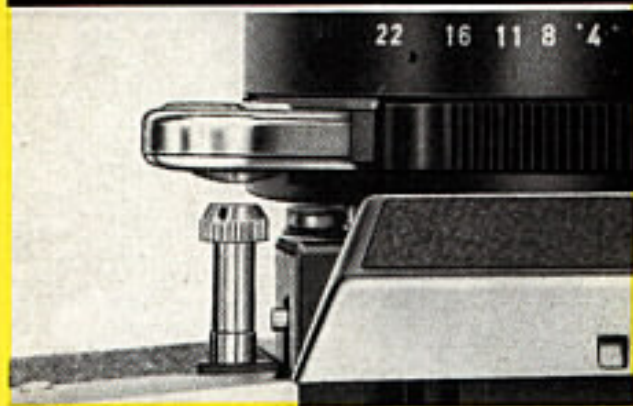
On the right above one example:

Distance setting 3 metres, aperture $f/8$ — depth of field extends from something more than 2 metres to 5 metres.





Changing the lens (22): Press the locking lever (19) towards the lens. Then turn the lens to the left until the orange-coloured dots (12 and 13) are in line. Lift the lens out towards the front. — To insert a lens, proceed in the reverse sequence: line up the orange-coloured dots, and turn the lens to the right until it locks in place.



In the EXAKTA RTL 1000 there can be used special-purpose lenses with focal lengths ranging from the shortest to the longest. All lenses for the earlier EXAKTA and EXA models can be used. However, in order to be able to operate their automatic diaphragm mechanism (external release), you have to screw an adapter into the left-hand release (16).

Lenses for the EXAKTA RTL 1000

Designation	Type of aperture*	Angle of view	Focusing range to
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New original lenses with automatic pressure diaphragm and internal release

Standard lens:

Oreston 1,8/50	ADB	47°	0.33 m
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Wide-angle lens:

Orestegon 2,8/29	ADB	73°	0.25 m
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Telephoto lens:

Orestor 2,8/100	ADB	24°	1.10 m
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Other supplementary lenses:

Flektagon 4/20	ASB	93°	0.16 m
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Lydith 3,5/30	VB	71°	0.33 m
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Flektagon 2,8/35	ASB	62°	0.18 m
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from Jena B 1,5/75	VB	32°	0.8 m
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Orestor 2,8/100	RB	24°	1.10 m
-----------------	----	-----	--------

Orestor 2,8/135	VB	19°	1.50 m
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from Jena S 4/135	ASB	18,5°	1.0 m
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from Jena S 2,8/180	ASB	14°	1.70 m
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Orestegor 4/200	VB	12°	2.5 m
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Orestegor 4/300	VB	8°	3.60 m
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from Jena S 4/300	ASB	8°	3.0 m
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Orestegor 5,6/500	VB	5°	6.0 m
-------------------	----	----	-------

from Jena	no		
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catoptric lens 4/500	diaphr.	5°	8.0 m
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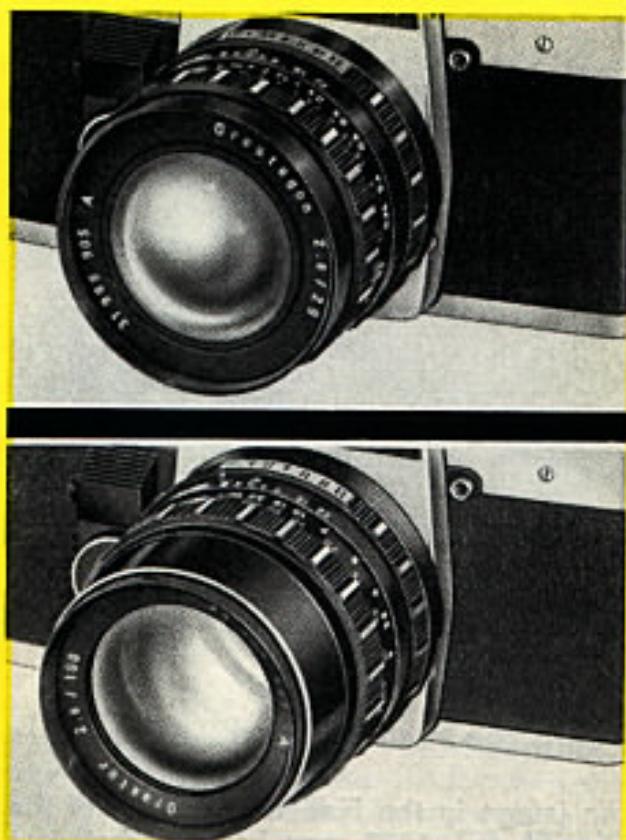
from Jena	no		
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catoptric lens 5,6/1000	diaphr.	2.5°	16.0 m
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*ADB = Automatic pressure diaphragm with internal release ASB = Automatic spring diaphragm with

external release RB = Click-Stop-Diaphragm

VB = Pre-set diaphragm



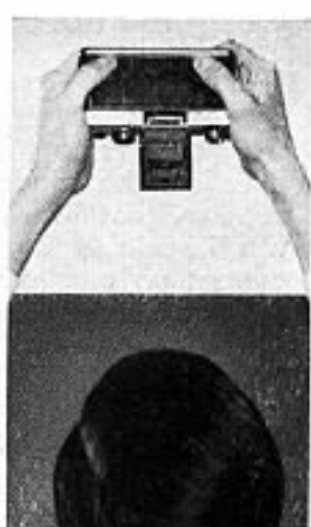
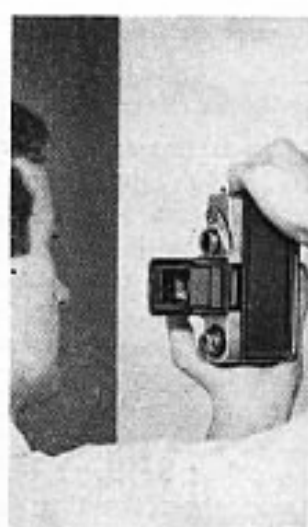


Using the Finder Hood

The image in the Finder Hood (11) of the EXAKTA RTL 1000 may be used both for

selecting or framing the subject, and also for focusing and checking the depth of field, by provisionally stopping down the lens. Generally, a large enough image for normal viewfinding purposes will be obtained when using the image field; for critical focusing, however, we recommend the additional use of the Swing-up Focusing Magnifier (25). The latter will spring into its working position when the Finder Hood is opened, but can be folded back out of the way when operated as described at page 6.

Normally, the EXAKTA RTL 1000 is held at chest or shoulder level when using the Finder Hood. When the pivoted supplementary Focusing Magnifier (25) is also used, the camera must be held close to the eye. When taking vertical pictures with the Finder Hood it is possible to shoot at right angles. This is particularly useful for working inconspicuously since the photographer can remain in concealment. The image in the Finder Hood (11) can also be observed



from below when the camera is held above the head. This will prove very useful when taking pictures over walls or over the heads of crowds.

Users who normally wear spectacles should use their distance glasses for focusing with the Finder Hood. For interchanging the Finder Hood, see page 27.

Using the Penta Prism

The Penta Prism (41) serves the same purpose as the Finder Hood, with the exception, that the image in the viewfinder will invariably be upright and laterally-correct no matter whether the camera is held horizontally or vertically; this is particularly useful when taking pictures of moving subjects, since the image in the viewfinder will move in the same direction as the subject itself. With very rapidly-moving subjects the camera can thus be "panned" by swinging it gently in the direction of motion of the subject, as for example, with racing cars.

When employing the Penta Prism (41) the camera should always be held at eye level. Viewing the image through the eyepiece (42) may be effected with either eye. This is the most advantageous way to use the EXAKTA RTL 1000 with Penta Prism: The camera should be focused with the thumb



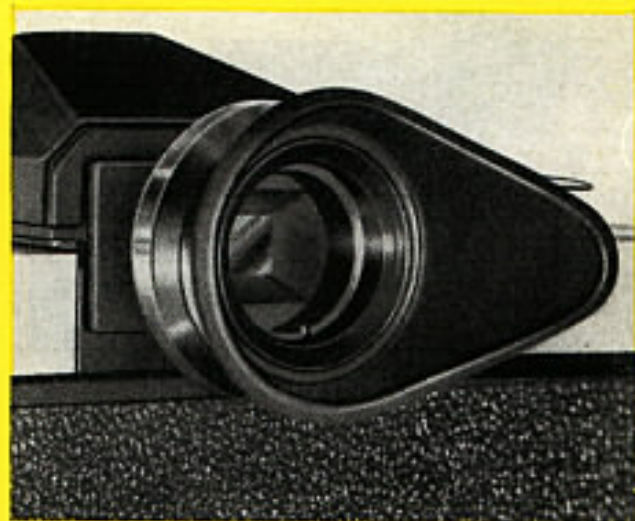
and index finger of the left hand, the right index finger being used for releasing the shutter.

Photographers who normally wear spectacles should use their distance glasses for

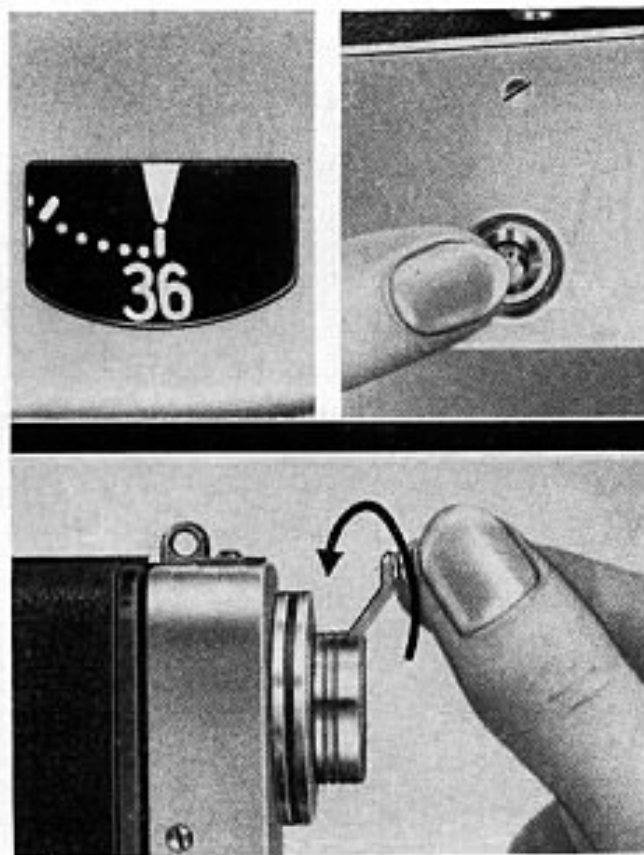


focusing with the Penta Prism. For fitting and removing the Penta Prism see page 27.

An invaluable accessory for use with the Penta Prism is the flexible eyepiece cup: this is fitted on to the eyepiece (42) of the



Penta Prism and shields it from distracting straylight. It is also helpful for spectacle-wearers since vision-correction lenses made by one's optician can be inserted into the revolving mount, making it possible to focus without wearing glasses.



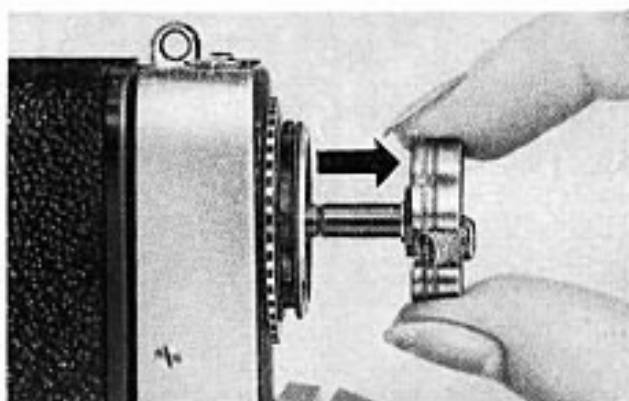
Changing the film

When the frame counter (7) indicates the maximum of exposures to be taken with the film with which the camera is loaded (12, 20 or 36), the film should now be rewound into its cassette.

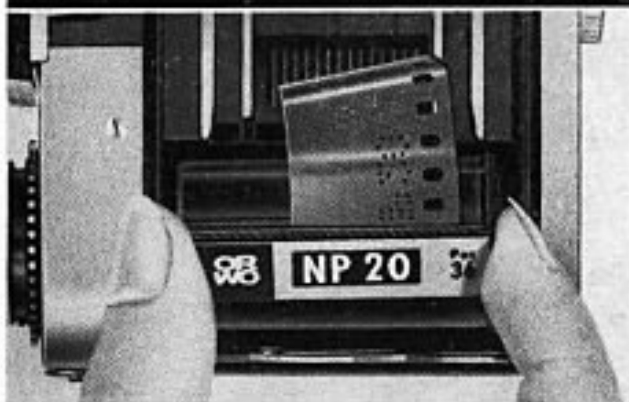
1. Press the rewind declutching button (38) into the camera.

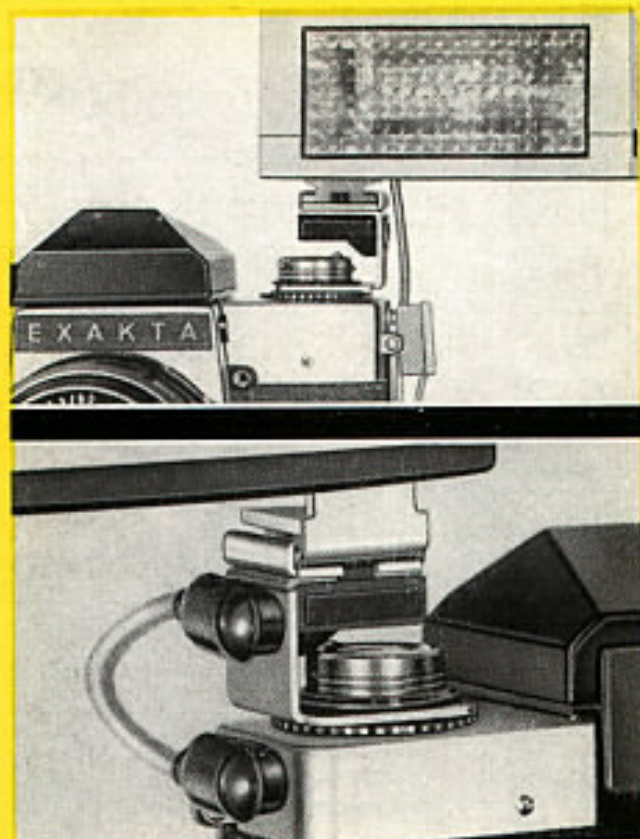
2. Swing the rewind crank (14) out, and turn it with the right hand evenly and slowly in the direction of the arrow (clockwise direction) until it is felt that it turns more easily, which means that the film has now been rewound. (If the film is rewound at too great a speed, static electricity will cause discharge marks to appear on the negatives.)

3. Swing the rewind crank (14) inwards and withdraw the knob of the rewind crank to the stop.



4. Open the camera back (37). Remove the cassette containing the reloaded film from the camera. Depress the knob of the rewind crank (14) back. On the next tensioning of the shutter the rewind declutching button (38) will automatically return into its normal position.





Flash Photography

The EXAKTA RTL 1000 is equipped with an X synchronization for electronic flash units and flashbulbs. The synchronizing cable of standard or electronic flashguns should be connected to the flash nipple (20). By means of an accessory shoe which has to be attached below the knob of the rewind crank (14), flashguns can be fastened directly to the camera.

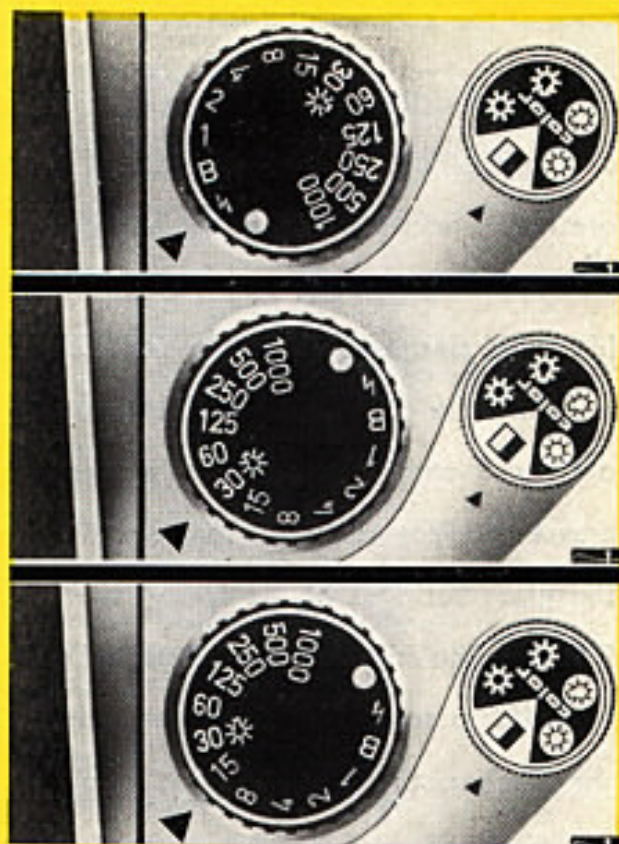
The accessory shoe is also adapted for flashguns with central contact except that in this case the flash nipples of the camera and of the accessory shoe must be connected by means of the special cable delivered with the flashgun.

In case of electronic flashguns turn the shutter-speed setting knob (10) until the flash symbol  will be in line with the orange-coloured triangle. The shutter speed set in this way is approximately 1/125 sec. Lower shutter speeds (1/60 sec., 1/30 sec., 1/15 sec. etc.) can also be set, for example 1/15 sec. or 1/8 sec. In case of electronic flashguns without storage condensers, designed for mains operation only.

In case of fast-burning miniature flashbulbs (for example NARVA X1, Osram AG 3 B, XM 1 B, XM 5 B as well as AG 3 B Super, PF 1 B, PF 5 B) turn the shutter-speed setting knob (10) until the flashbulb symbol and, accordingly, the fig. 30 will be in line with the orange-coloured triangle. This means that the shutter speed 1/30 sec. has been set.

In case of longer-burning flashbulbs set 1/15 sec. or any lower shutter speed.

For all flashlight sources used with the EXAKTA RTL1000 the effective exposure time will be approximately equal to the duration of the flash, and not to the time that the shutter remains open (this is important when taking photographs of moving objects).





TTL Penta Prism

(Automatic exposure timing with internal measurement)

The TTL Penta Prism provides the EXAKTA RTL 1000 with an automatic exposure timing on the basis of internal measurement through the lens (Through The Lens = TTL). This automatic system, taking into account film sensitivity, exposure time, and aperture number, will always measure only the light being effective for the photograph to be taken. This method of measurement is of greatest importance above all when employing special-purpose lenses (angle of view equal to the angle of measurement) as well as when working with extension-increasing accessories and filters (the exposure factors are automatically included in the measurements).

The use as a viewfinder unit is identical to that of the Penta Prism: always upright and laterally-correct image in the viewfinder. Photographers who normally wear spectacles should use their distance glasses. For fitting and removing the TTL Penta Prism as well as for exchanging its image field screens, see next page. — For the use of the automatic exposure timing (internal measurement) a detailed instruction leaflet is joined to the Penta Prism.

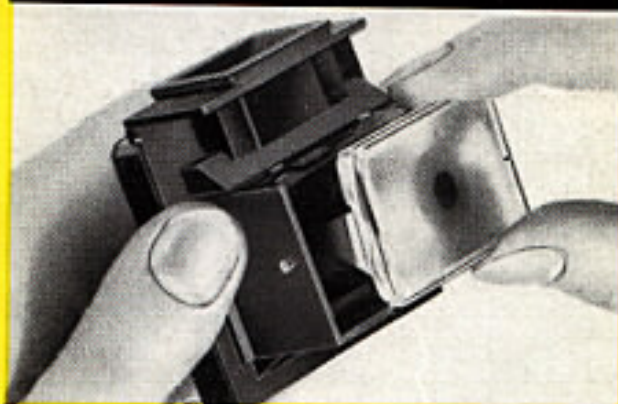
Interchanging the viewfinder systems

Each of the viewfinder systems of the EXAKTA RTL 1000 (Finder Hood, Penta Prism, and TTL Penta Prism) can be exchanged. — When any of the viewfinder units is being removed from the camera, the two unlocking knobs (43) must be pressed downwards with thumb and index finger of the left hand, and the viewfinder unit withdrawn upwards with the right hand without tilting. On replacing a viewfinder unit, it must be inserted squarely and vertically and be pressed downwards until it clicks into position. Never use force!



Exchanging the focusing screens

The focusing screen of the viewfinder units of the EXAKTA RTL 1000 can be exchanged so that, if desired, one of the special focusing screens can be used. — Remove the viewfinder unit from the camera. The focusing screen should be gripped by the long sides, and withdrawn from the viewfinder unit. To refit the focusing screen it should again be held by the long sides (do not touch the mat surface) and pressed into the frame of the viewfinder unit.



Care of the camera and lenses

Always keep the camera in its ever-ready case with the lens (or lenscap) and viewfinder unit in position; alternatively it may be kept wrapped in a fluff-free cloth. All parts which are easily accessible from the outside should be kept clean and dusted with a soft brush. This applies particularly to the film channel (29) with the film-guide runners (31) and the film-wind sprocket (32), the cassette chamber (28), the film rest (33), the take-up spool (34) and also the camera back (37) including the pressure plate (36). The reflex mirror should only be dusted when absolutely necessary, using a clean soft brush without applying any pressure. Protect the camera against moisture, dust, wind-borne sand, etc. Never touch the glass surfaces of the lenses, the focusing screens or the eyepieces of the two Penta Prisms or the mirror with the fingers. These glass surfaces should be cleaned when necessary only with a soft, fluff-free linen cloth. It is highly inadvisable to attempt to interfere with the mechanism of the camera; repairs should be undertaken only by authorized servicing agencies.

Original

EXAKTA

Dresden

Accessories

Finder Hood

Penta Prism

TTL Penta Prism for internal measurement

Eye-piece cup for Penta Prisms

Ever-Ready Case

Counter-light Lens Hood with screw-in mount
M 49 x 0.75

Accessory shoe

Angular viewfinder for Penta Prisms

Focusing telescope for Penta Prisms

Bayonet rings and tubes as well as Two-In-one ring
for close-ups

Adapter rings with tappet 12.5 mm and 25 mm for
lenses with internal release (for close-ups)

Miniature Bellows Attachment

Autocouple Extension Release for lenses with
external release

Special ring with socket for cable release

Special adapter ring with double cable release

Multi-Purpose equipment for close-ups, reproduc-
tions and photomicrography, etc., consisting of the
following parts:

Large Bellows Attachment

Transparency Copying Attachment

Copying Stand for direct fastening of the camera

Repro Unit (with Large Bellows Attachment, with
Lighting equipment, if required) and others

Lighting equipment for Copying stand and
Repro Unit

Special-purpose lens T 2.8/50 from Jena, in sunk
mount for Large Bellows Attachments

Lens Reversal Rings

Adapter Rings for using photomicrographic lenses

Special Focusing Screens

Lens Magnifier Insert with Top Lens

Macro-Micro Photometer

Ringflash Units RB 1 and RB 2

Kolpofot

Endoscope Attachment

Spectroscope Adapter Ring and Sleeve

Adapter for Astrophotography

Microscope Attachment

Universal tripod

Focusing slide

Should you want further information, we shall be pleased to send you any special leaflets.

The illustrations in this manual may differ in certain details from the actual appearance of the camera
and its accessories.

CAMERA
«LUBITEL 166-UNIVERSAL»

Operation Manual

LUBITEL 166
UNIVERSAL

1. GENERAL INSTRUCTIONS

«LUBITEL 166-UNIVERSAL» (Fig. 1) is an up-to-date and simple in operation camera intended for the widest range of photo amateurs.

The camera incorporates a coated lens, two viewfinders (optical and frame one), diaphragm shutter with wide range of speeds, self-timer and flash synchronizer. It assures precise focusing, operation with two picture sizes (6×6 and 4.5×6 cm), daylight reloading and exterior shooting on tripod and hand-held shooting.

It is enough to raise a little the reflex viewfinder cover to see deep between the light protective hoods a large and for any illumination distinct clear image according to which it is easy to fit frame limits when the object is already found or to find a new scene.

Image focusing is performed by slight rotation of either lens knurled mount.



Fig. 1

Scales of distances, diaphragms and exposures and all the control units are located to assure speed and convenient operation.

Frame counting is performed through the window according to values on light protective paper of the film.

Due to reflex viewfinder it is possible to take pictures at high level holding the camera over the head as well as turning it horizontally at the right angle.

Viewfinder lens has $f/2.8$, i. e. considerably higher than the photographic lens and thus the higher sensitivity to focusing.

For taking pictures at eye level (shots have then more natural perspective) the frame viewfinder is used that is more convenient when there is experience in estimating distances by eye and in correct focusing according to distance scale.

It is daylight loaded camera. For convenience the back is hinged.

The camera is rated for work in the temperature range from minus 15 to $+45^{\circ}\text{C}$ without direct effect of solar radiation and atmospheric precipitation.

Correct choice of materials, camera design and its production process assure safety of the camera use for an user and an environment.

2. TECHNICAL DATA

Film accepted, mm	61.5
Picture size, cm	6×6 and 4.5×6
Picture number	12 or 16
Photographic lens — coated three-element anastigmat T-22:	
focal length, cm	7.5
relative aperture	f/4.5
Viewfinder lens relative aperture	f/2.8
Automatic shutter speeds, s	1/250, 1/125, 1/60, 1/30, 1/15
With shutter set to «B» any manual-control shutter speeds are obtainable.	
Diaphragm scale	from 4.5 to 22
Distance scale, m	from 1.3 to ∞ (infinity)
Self-timer operation time, s	7—15
Thread dimensions for the light filter mount, mm	40.5×0.6

3. COMPLETE SET

3.1. Camera «LUBITEL 166-UNIVERSAL»	1
3.2. Film rewinding spool	1
3.3. Cable release	1
3.4. Shoulder strap	1
3.5. Lens cap	1
3.6. Film gate limiting frame	1
3.7. Frame finder washer	1
3.8. Accessories box	1
3.9. Casing	1
3.10. Stowage box	1
3.11. Operation manual	1

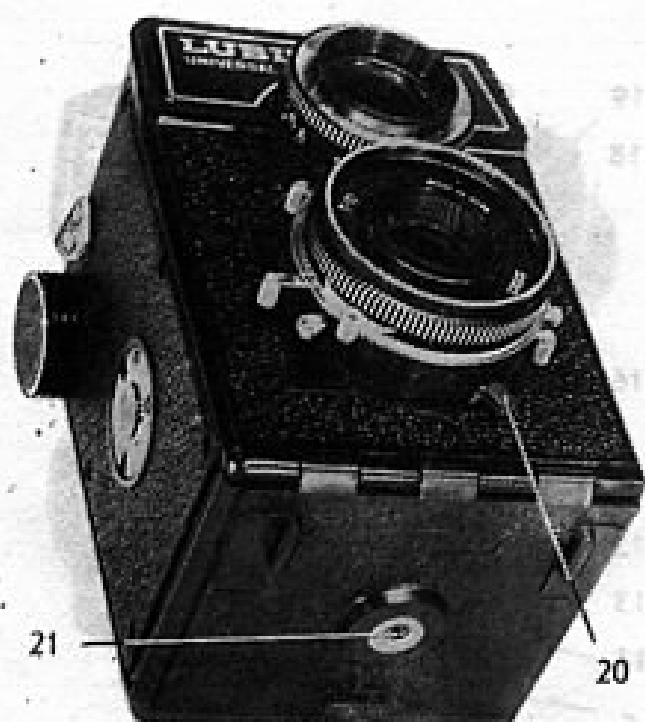


Fig. 4

- 20 — diaphragm control lever;
- 21 — tripod nut;
- 22 — field lens;
- 23 — 4.5×6 cm limiting marks;
- 24 — lock index;
- 25 — ground glass circle;
- 26 — folding focusing magnifier;
- 27 — viewfinder cover lock;
- 28 — camera back lock head;
- 29 — take-up spool;
- 30 — window cover plate head;

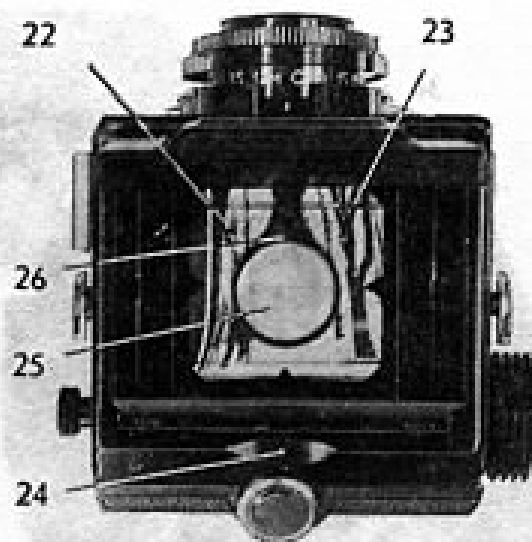


Fig. 5

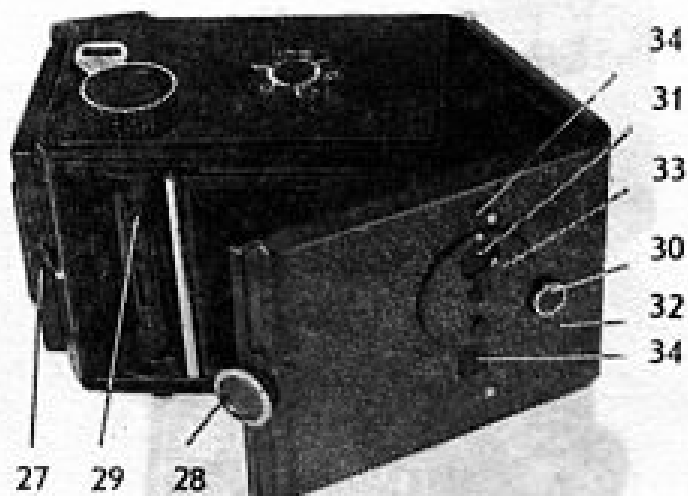


Fig. 6

31 — window;
 32 — back;
 33 — turret to adjust windows according to a picture size required;

34 — window adjustment index;

4. CAMERA DESIGN AND OPERATION

Figs 2—8 show main camera parts.

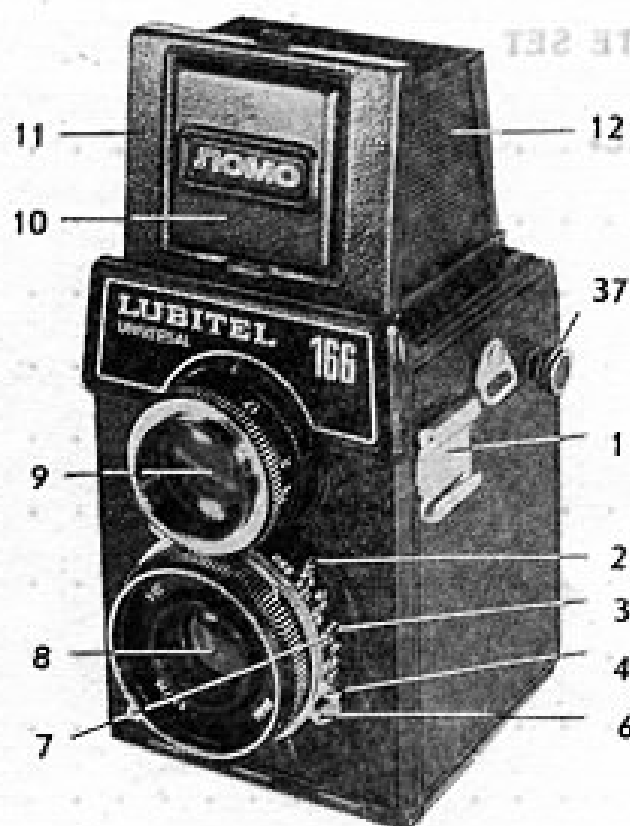


Fig. 2

- 1 — block for fixing accessories;
- 2 — diaphragm scale indicator;
- 3 — diaphragm scale;
- 4 — flash shoe;
- 5 — dog of the shutter speed adjusting ring;
- 6 — self-timer lever;
- 7 — exposure scale;

- 8 — photographic lens;
- 9 — viewfinder lens;
- 10 — plate;
- 11 — front frame;
- 12 — light protective hood;
- 13 — shutter release lever;
- 14 — cable release socket;
- 15 — shutter cocking lever;
- 16 — distance scale;
- 17 — reminder dial;
- 18 — film rewinding knob;
- 19 — sling swivel;

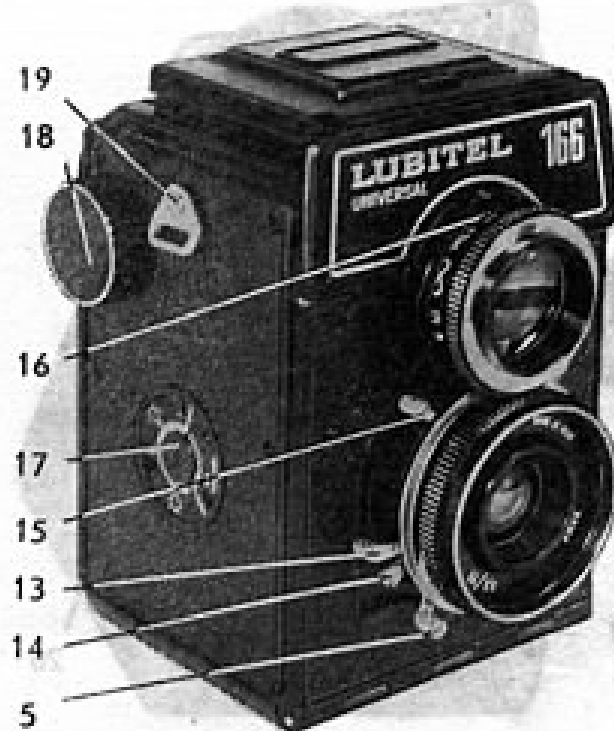


Fig. 3



Fig. 7

35 — frame finder washer;

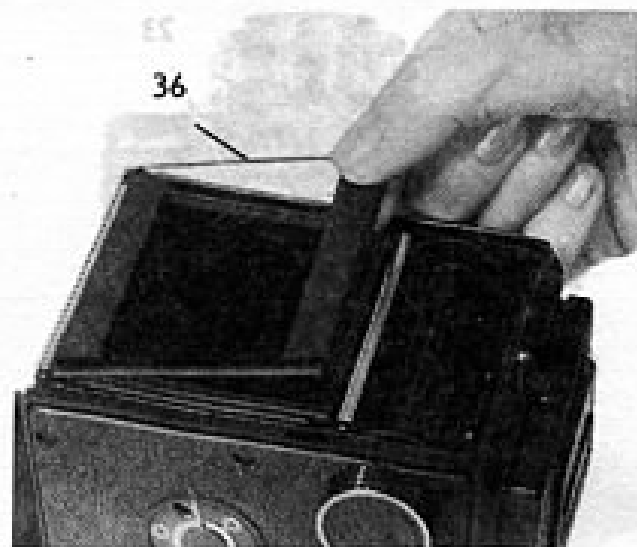


Fig. 8

36 — film gate limiting frame;
37 — take-up spool spindle head.

The reflex viewfinder consists of the viewfinder itself and a ground glass representing a small circle in the centre of field lens, with a folding focusing magnifier mounted above.

The field lens bears marks which limit the field of picture to 4.5×6 cm.

The viewfinder is provided with metal light protective hoods that open simultaneously with raising the cover.

The viewfinder should be closed by the following procedures: first close the magnifier, then the side hoods, the rear hood with a square window and at last the cover until its front frame lug catches with the viewfinder case lock catch.

Focusing the images on the ground glass circle and in film plane is performed simultaneously as both lenses are coupled with each other with knurled mounts. The nearest focusing distance is 1.3 m.

The focusing magnifier is attached to the panel from inside. The magnifier is set to operation by pulling it up from the cover.

The frame viewfinder is formed by the front frame and rear light protective hood with a square window. To open the viewfinder it is necessary to tilt the panel inside so that it catches the rear hood lug. Slightly pulling out the rear hood is enough to close the viewfinder.

A washer is included in the camera delivery set to obtain pictures of 4.5×6 cm size. The washer is inserted between the panel and front frame of the finder after the panel catches the rear hood lug.

To determine image limits the camera should be held at eye level, the object should be observed through the square window in the rear hood keeping the camera at the distance when the window edges coincide with those of the square opening in front frame. In this case the limits of the viewfinder field will be the image limits.

The distance scale is graduated at viewfinder lens mount in metres.

Diaphragm shutter is automatically giving the following speeds: 1/250, 1/125, 1/60, 1/30, 1/15 s. With shutter set to «B» any manual-control shutter speeds are obtainable.

Selected exposure time is set by rotating the adjusting ring dog 5 (fig. 3) to coincide the ring edge index with required exposure value.

Before shooting it is necessary to cock the shutter rotating the cocking lever fully downward. Shutter is released with smooth pressing the release lever or the knob of the cable release, the camera is provided with the socket for it. With shutter set to «B» index it remains opened from the moment of pressing the release lever till its releasing.

To activate the self-timer it is necessary to set the selected automatic exposure, cock the shutter, turn the self-timer lever 6 (fig. 2) fully downward and to press the release lever 15 (fig. 3). In 7—15 seconds the shutter will operate and the picture will be taken.

Remember that with shutter set to «B» and release lever pressed it is impossible to cock the self-timer lever.

Flash synchronizer is intended for matching the flashing moment with complete shutter opening.

With electronic flash used the shutter may be set to any automatic exposure. With flash bulb used the shutter should be set to 1/15 or «B». On releasing the shutter the synchronizer will act automatically.

Distance corresponding to scale division, m	Depth of field in metres with diaphragms					
	1:4.5	1:5.6	1:8	1:11	1:16	1:22
∞	25.59—∞	20.57—∞	14.40—∞	10.47—∞	7.20—∞	5.24—∞
15	9.44—35.62	8.74—53.75	7.42—∞	6.25—∞	4.95—∞	3.97—∞
8	6.14—11.51	5.81—12.89	5.20—17.50	4.60—31.71	3.87—∞	3.25—∞
6	4.22—6.15	4.06—6.52	3.76—7.50	3.44—9.25	3.02—15.16	2.63—66.77
4	3.49—4.69	3.38—4.90	3.17—5.43	2.94—6.28	2.63—8.51	2.34—14.89
3	2.70—3.37	2.64—3.47	2.52—3.72	2.37—4.09	2.17—4.91	1.97—6.49
2.5	2.30—2.74	2.25—2.81	2.16—2.97	2.06—3.20	1.90—3.67	1.75—4.47
2	1.87—2.15	1.84—2.19	1.79—2.28	1.71—2.41	1.61—2.66	1.50—3.05
1.7	1.61—1.80	1.59—1.83	1.54—1.90	1.49—1.98	1.41—2.14	1.33—2.38
1.5	1.43—1.58	1.41—1.60	1.38—1.65	1.34—1.71	1.27—1.83	1.21—1.99
1.3	1.25—1.36	1.23—1.37	1.21—1.41	1.18—1.45	1.13—1.53	1.07—1.64

The diaphragm serves for the control of light opening diameter. The stopping down is performed by moving the lever 20 (fig. 4) with pointer 2 (fig. 2). The lens is stopped down when increase of the depth of field is desirable or when the available light is too intensive. Photographic lens depths of fields with different diaphragms and distances are given in the table.

At exposure scale every following value is two times preceding one. The diaphragm (except the first one) is f-numbered in such a manner that the pointer moving to a stop increases or decreases the amount of light for exposure two times. For instance the exposure time is 1/60 second at f/5.6 and if the lens has been stopped down to f/8 in other equivalent conditions the shutter should be set to 1/30 second.

Exposures and f-numbers carry the denominators only, as «15» instead of 1/15, «4.5» instead of 1/4.5 and so on.

The diaphragm scale between values «8» and «11» and distance scale between «8» and «15» are marked with white dots. With diaphragm scale pointer and distance scale index set to these dots all the images of objects at a distance of 4.5 m to infinity are obtained sharp.

5. CAMERA OPERATION PROCEDURES

5.1. Loading the Camera

Taking the camera in your left hand, open the camera back turning for this aim lock head 28 (Fig. 6) until the index on the head and the dot on the body are matched.

For shooting 4.5×6 cm pictures, put limiting frame 36 (Fig. 8) on the film gate.

Turning the film rewinding knob 18 (fig. 3), bring the spool slot at position convenient for loading the film protective paper end.

Break the seal of the film protective paper and insert the spool with the film into the body receptacle between the spring and the body wall having pressed the flat spring with your finger.

Unwind the end of the protective paper and on folding it down for about 10 mm insert in the slot of the take-up spool. Then holding the spool with the film with your left finger and rotating the film rewinding knob wind 2—3 layers of the protective paper to the take-up spool. Close the camera back assured that the paper tension is good.

Depending on picture size chosen (4.5×6 or 6×6 cm), turn turret 33 (Fig. 6) until window 31 is adjusted at respective index 34.

Having turned the window cover plate head 30 to the right or to the left rotate the film rewinding knob 18 (fig. 3) until first the signal marks on protective paper and then «1» appear in the window. Close the cover plate.

5.2. Taking Pictures

Before taking pictures take the cover off the lenses, set the required exposure time and diaphragm. Exposure is set on exposure scale by rotating exposure adjusting ring dog 5 (fig. 3). The required diaphragm value is set by moving the lever 20 (fig. 4) with index along the scale.

Looking to the viewfinder determine the frame limits [for 4.5×6 cm picture size, limiting marks 23 (Fig. 5) are put down on the field lens] and with the focusing reach the required sharpness at the ground glass circle. If the object image that is required to get most sharp should be located at the picture edge

turn the camera while focusing so that the object image was in the center and prior to the shutter release return the camera to the initial position.

With the cocking lever 15 (fig. 3) cock the shutter and release it smoothly. Pull the film at a picture length (immediately after taking, in order not to forget). To do that open the window cover plate and rotate the film rewinding knob 18 till the following figure appears in the window, then close the cover plate.

5.3. Unloading the Camera

After the last exposure has been made rewind the film protective paper onto the take-up spool. Sometimes when the winding is almost completed the turning of the knob is detained due to the paper jammed in the supply spool slit. However this should not prevent the daylight unloading the camera.

Open the camera back.

Fully pull off the film rewinding knob and take-up spool head.

Carefully take out the spool with the exposed film, seal the protective paper end and keep the film until it is developed.

Take the spool out of supply spool receptacle and insert into that of the take-up spool. Further, slightly turning the film rewinding knob, press it and the head of the take-up spool spindle up to the stop.

Close the camera back.

Put cover on the camera lenses. For convenience purposes, adjust their mounts at the same level.

6. MAINTENANCE

Handle the camera with care.

Contaminated lenses deteriorate pictures sharpness, so it is necessary to keep

lenses always clean. The objective lenses could be wiped from the outside only using a clean cambric or linen cloth or cotton wool, on having breathed on them.

Never dismount the camera.

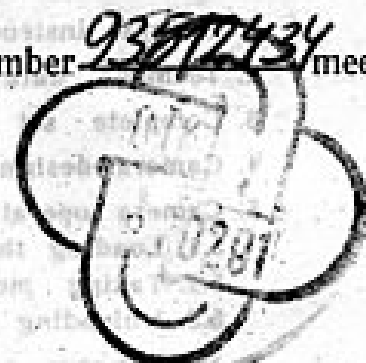
Never wipe the plastic parts of the camera and the field lens with alcohol, acetone and other active solvents.

7. ACCEPTANCE CERTIFICATE

The camera «LUBITEL 166-UNIVERSAL» of serial number 93572434 meets the technical requirements and is found fit for operation.

Production date _____

12 - 93



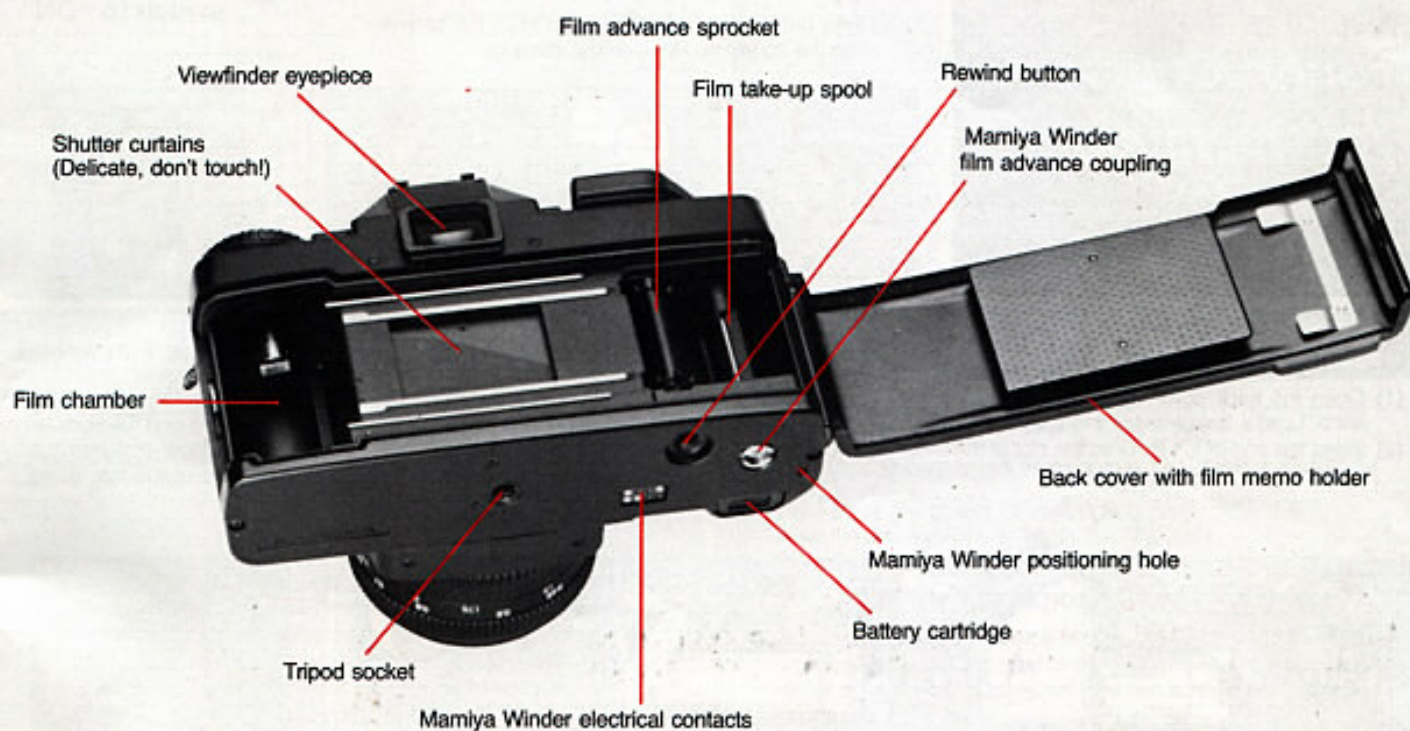
Mamiya ZM QUARTZ

Instructions



Description of Parts

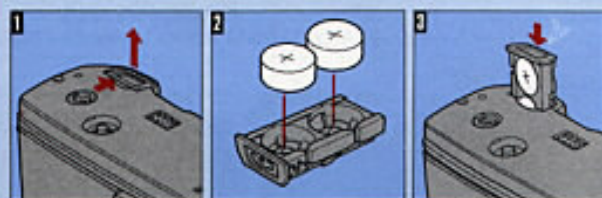




Short Course of Operation

1. Insert the batteries.

Take out the battery cartridge and insert two batteries into the cartridge. Replace the cartridge.

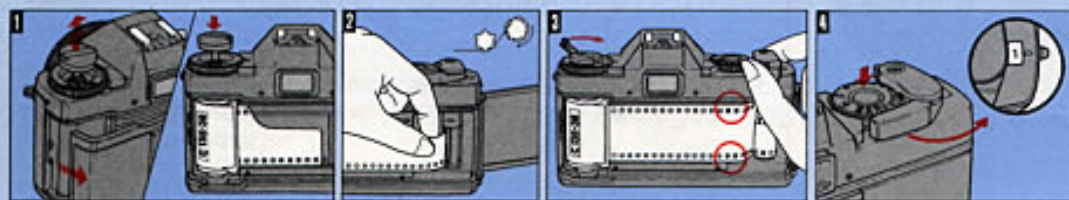


2. Turn the main switch to "ON".



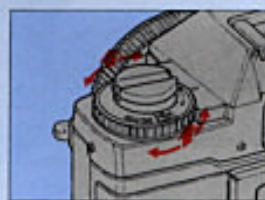
3. Load the film.

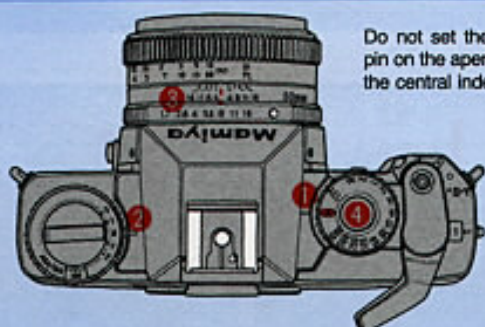
- (1) Open the back cover by pulling up the rewind knob. Load a film cartridge into the film chamber.
- (2) Insert the end of the film into the slot of the take-up spool.
- (3) Advance the film until the film perforations are engaged with the sprocket teeth.
- (4) Close the back cover tightly and make two blank exposures until the exposure counter stops at "1".



4. Set the film speed.

Lift up the film speed dial and rotate it until the number in the window matches the film speed of the film being used.





Do not set the auto lock pin on the aperture ring at the central index mark.

5. Set the camera in AE mode.

- (1) Set the shutter speed dial to "A".
- (2) Set the exposure compensation dial to the "0".
- (3) Set the aperture in accordance with the light conditions.

Recommended apertures
(with ASA/ISO 100 film)

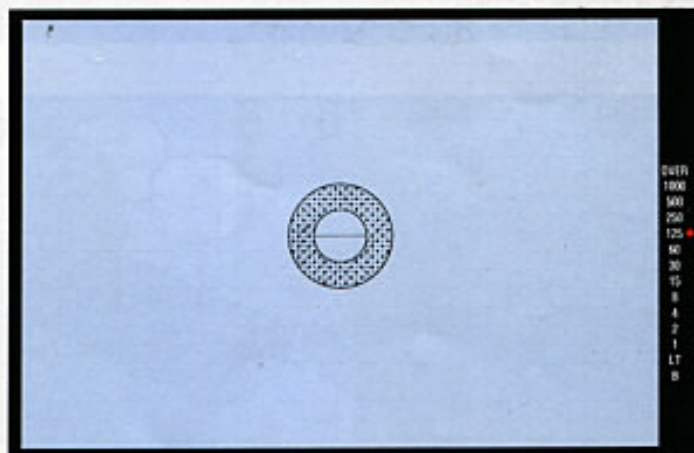


f/16 - 11

f/11 - 8

f/5.6 - 4

- (4) When the shutter release button is lightly pressed, an LED lights inside the viewfinder to indicate the correct shutter speed automatically selected by the camera in accordance with the aperture setting.
If an LED flashes or buzzer sounds, see page 10.
You can select the shutter speed manually for special effects. For details of the manual mode, see page 11.



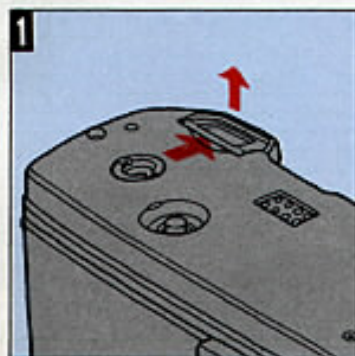
6. Compose and focus on the subject.

Then press the shutter release button gently.
Wind the film advance lever for the next shot.

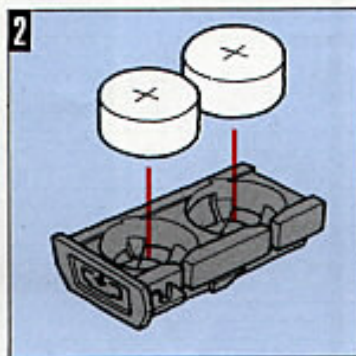
7. When the last exposure has been made ...

Press in the rewind button. Fold the crank out and rotate the rewind knob in the direction of the arrow. See page 13.
Never open the back cover until the film is rewound back into the cartridge.

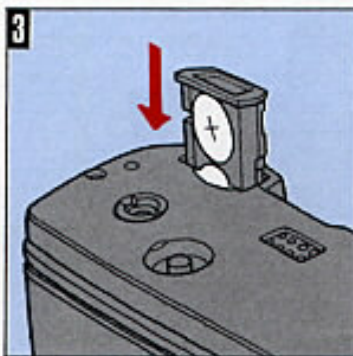
Loading the Batteries



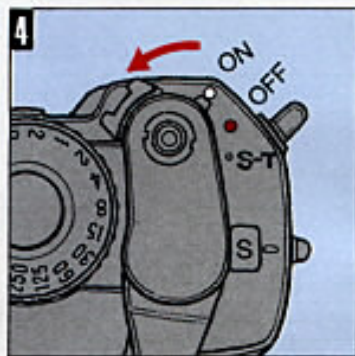
1. Push the battery cartridge in the direction of the arrow. The cartridge will pop up for easy removal.



2. Load the two batteries that come with the camera, making sure that plus (+) terminals are facing up.



3. Insert the cartridge as shown in the illustration. Then press down until the cartridge locks into place.



4. Turn the main switch to "ON". This switch should be left in the "OFF" position when the camera is not in use.

Lens Mounting/Removal

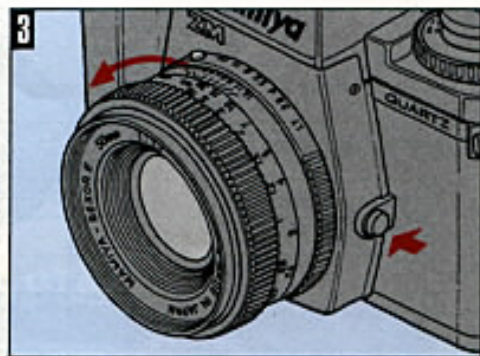


Match the red dots on the lens and camera body, then rotate the lens in the direction of the arrow until it clicks into position.



If the auto lock pin (A) is set at the central index mark, the aperture ring cannot be turned. In this case, rotate the aperture ring away from the index mark while depressing the auto lock pin.

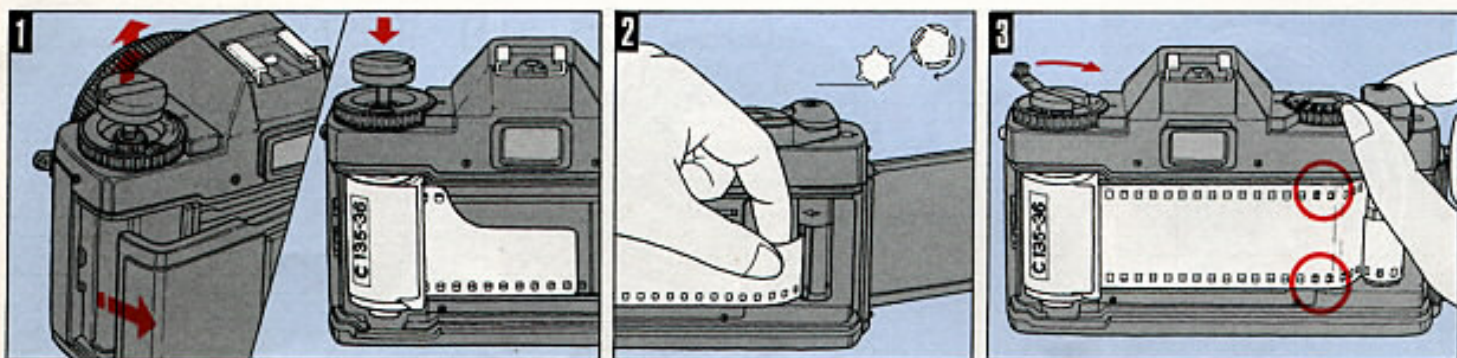
- The auto lock pin should be set to the central index mark when the lens is mounted on a camera like the Mamiya ZE-X which is capable of shutter speed priority AE mode.



Removing the lens

Press the lens release button and rotate the lens to the left until it stops.

Loading the Film



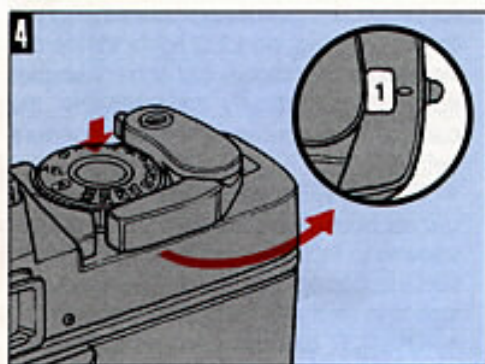
1. Open the back cover of the camera by pulling up on the rewind knob. (Avoid direct sunlight when loading or unloading film. Stand in the shade or cast a shadow with your own body.)

Load a film cartridge into the film chamber of the camera and return the rewind knob to its original position to hold the film in place.

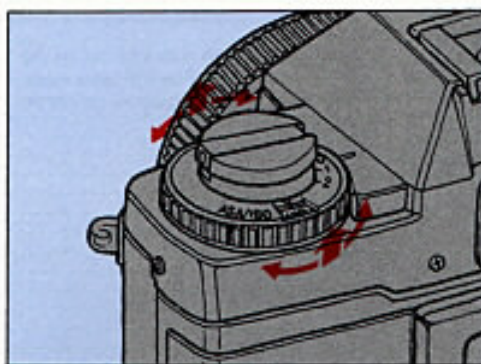
2. Insert the end of the film into the slot of the film take-up spool.

3. First advance the film by operating the film advance lever; then rotate the rewind knob in the direction of the arrow to take the slack out of the film. It is important to make sure that the both the upper and lower teeth of the sprocket are engaged in the perforations of the film.

Setting the Film Speed



4. Close the back cover of the camera and advance the film by alternately operating the film advance lever and releasing the shutter until the numeral "1" appears in the exposure counter. While performing this operation, make sure that the film is advancing properly by checking if the rewind knob rotates when the film advance lever is operated.



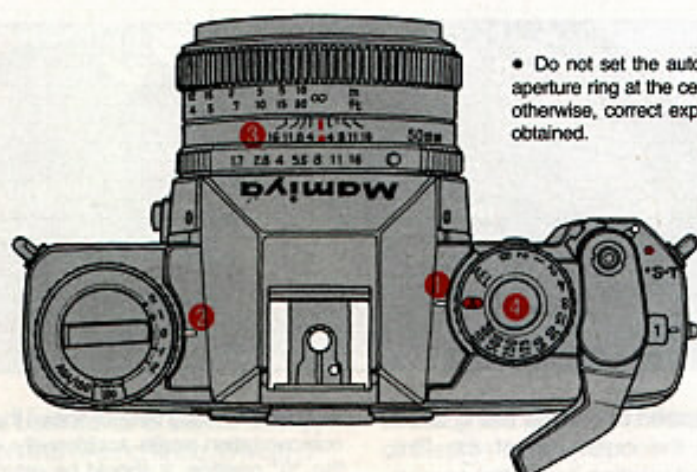
Set the film speed of the film being used by lifting up the outer rim of the film speed dial and rotating it until the correct ASA/ISO value appears in the window. (The film speed is indicated on the film cartridge or box.)

• If, when setting the film speed the exposure compensation scale accidentally shifts from the "0" position, it should be returned to the "0" position.

It is convenient to remove the end of the film box and insert it into the memo holder on the back of the camera. Intermediate film speeds can be set as follows when necessary.

ASA/ISO	12	•	•	25	•	•	50	•	•	100	•	•	200	•	•	400	•	•	800	•	•	1600	•	•	3200
	16	20	32	40	64	80	125	160	250	320	500	640	1000	1250	2000	2500									
DIN	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

AE (Automatic Exposure) Photography



1. Set the shutter speed dial to "A" for AE (automatic exposure) operation.
2. Set the exposure compensation dial to the "0" mark. (How to use exposure compensation is explained later.)
3. Set the aperture after selecting in accordance with the light conditions as shown in the illustration.

Recommended apertures
(with ASA/ISO 100 film)



f/16 - 11



f/11 - 8



f/5.6 - 4

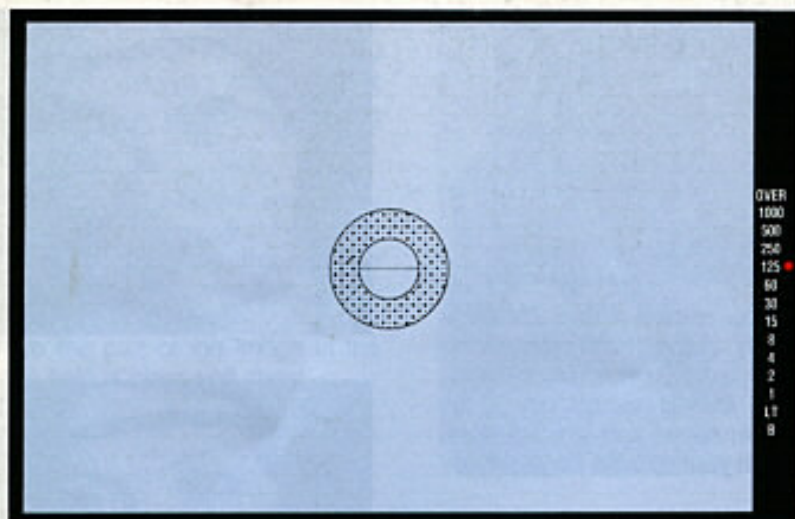
4. When the shutter release button is lightly pressed, an LED lights inside the viewfinder to indicate the correct shutter speed automatically selected by the camera in accordance with the aperture setting.

- The "OVER" LED flashes and the buzzer sounds at the rate of 8 times per second to indicate overexposure. To obtain the correct exposure, turn the aperture ring until the LED stops flashing.

- The "LT" LED flashes and the buzzer sounds at the rate of 8 times per second to indicate underexposure. Again, turn the aperture ring until the LED stops flashing.

- A lit "LT" LED also indicates that the shutter speed is set between more than 1 second and 4 seconds. The use of a flash unit is recommended in conditions so dark that the "LT" LED remains lit or flashes.

- If any of the shutter speed LEDs flash slowly (2 times per second) and the buzzer sounds, this is an indication that the batteries are low and should be replaced.



- Keeping the shutter release button pressed after the exposure has been completed causes the LED display to continue indicating the same shutter speeds to permit easy checking of whether or not the exposure was correct.

- **Slow Shutter Speed Warning**

When the shutter speed automatically selected by the camera in the "A" (Auto) and "AEL" (AE Lock) modes is too slow for hand-held shooting, a buzzer will sound at the rate of 1 time per second warning you to set the lens to a wider

aperture (giving you a faster shutter speed), or to mount the camera on a sturdy tripod to avoid the possibility of blurred pictures.

The safe slowest shutter speed for hand-held shooting varies with the focal length of the lens in use. The slow shutter speed warning system automatically adjust for this variation when you change lenses.

It is also possible to take photographs with preset shutter speeds

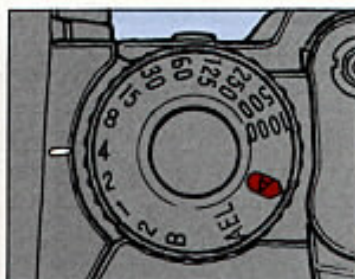
1. Set the shutter speed dial to the desired speed.
2. Light pressure on the shutter release button will cause an LED to light and indicate the shutter speed selected. If the lens aperture is not appropriate for the degree of brightness, a second LED will flash (4 times per second) to indicate another speed.
3. The correct exposure can be obtained by turning the aperture ring until the

Manual Exposure

Focusing

flashing LED and the steady LED coincide.

- When the shutter speed setting is appropriate for the aperture, a single LED will light (but not flash).
- With manual shutter speed settings, the LED remains lit for 10 seconds after the shutter release button is pushed lightly and then released. If the shutter release button is released after the exposure is completed, the LED will go out even before ten seconds have elapsed. If light pressure is maintained on the shutter release button for more than ten seconds, the LED will disappear as soon as the button is released.



Manual shutter speeds for the ZM work independently of the metering system, allowing for maximum creativity in exposure control. During manual operation, set the shutter speed and lens aperture to accord with your specific exposure requirements.

Light pressure on the shutter release button will cause an LED to flash at the rate of 4 times per second to indicate the appropriate shutter speed for the aperture setting. The exposure should be adjusted on this basis.



Holding the Camera

Before taking a photograph, the subject must be brought into sharp focus by rotating the focusing ring. Correct focus can be checked by any of the following conditions:

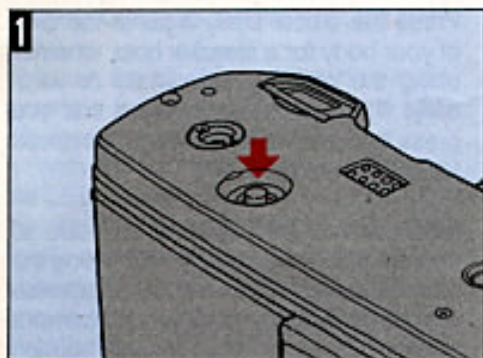
- (1) When lines in the central split-image rangefinder appears straight.
- (2) When the part of the image in the microprism ring appears sharply defined.
- (3) When the part of the image in the matte field is clear and sharp.



Press the elbow firmly against the side of your body for a steadier hold, whether using the camera horizontally or vertically. It is also recommended that you press the camera against your forehead for extra steadiness.

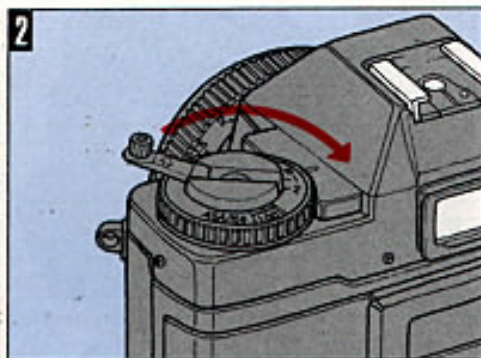
Most blurred photographs are due to camera shake caused by not holding the camera steady. Improve the sharpness of your pictures by holding your camera steady. Depress the release button gently with a squeezing motion, without jerking.

Rewinding the Film

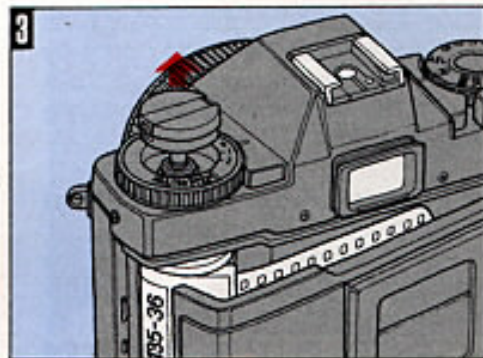


When the last exposure has been made, the film must be rewound back into the cartridge before removing it from the camera. Never open the camera back until this has been done.

1. Press in the rewind button.



2. Fold the crank out from the rewind knob and rotate in the direction of the arrow.



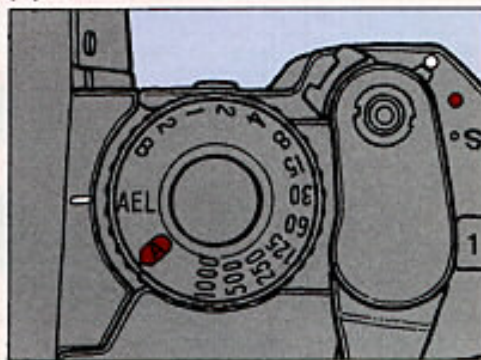
3. When the rewind knob starts to turn lightly, pull up on the rewind knob to open the camera back and remove the film.

- When the film has been fully advanced, the film advance lever may stop halfway. Press the rewind button and rewind the film. Turn the film advance lever fully after the completion of rewinding and it will return to its normal position.

Exposure Compensation

The center-weighted exposure metering system of the ZM will give you the best possible exposures in most of all shooting situations. However, when the subject is situated against a bright light source such as snow, against a window, in the shade of a backlit tree, or when the subject is spotlighted on stage against a dark background, some exposure increase or decrease may be required to bring out the details of the subject. The exposure compensation may be accomplished by either of two methods described below.

(1) AE Lock

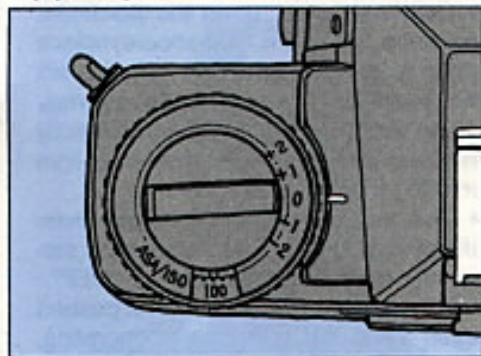


The Mamiya ZM is equipped with a special device for obtaining correct exposure not only with backlighting, but any other difficult lighting situation as well. And this device is called the AE Lock. Set the shutter speed dial to the "AEL" (AE Lock) position. When the shutter release button is lightly pressed the camera locks in, or memorizes, the exposure reading until the finger is removed from the release button.

To use the AE Lock function, move close to the subject until the desired part of the subject covers the center area of the viewfinder and lightly press the shutter release button until the LED lights. Hold the shutter release in this position and move back to the place from where you want to photograph, compose the picture and press the release button to make the exposure. The subject will be correctly exposed even under difficult light conditions.

If it is not possible to move close to the subject, determine the exposure using the palm of the hand at a distance of about 12" (30cm), or point the camera so that sky or other bright areas are not included in the viewfinder; then lock in the exposure value and make the exposure as described above.

(2) Exposure Compensation Dial



Use of the exposure compensation dial is the most effective method of exposure compensation when you cannot approach your subject closely, such as a person standing against the snow across the river or spotlighted on stage, etc.

The dial surrounds the film rewind knob permits up to $\pm 2\text{EV}$ (2 f/stops) compensation. When compensation is required it may be set for exposure increase at +1 +2 or exposure decrease at -1 -2 by rotating to the desired setting. In-between settings may also be used. The amount of increase or decrease required depends mainly on experience; in the beginning, it's a good idea to take same photo at two or three settings to be on the safe side.

Be sure to set the dial back to "0" when exposure compensation is not longer needed to avoid exposure failures.

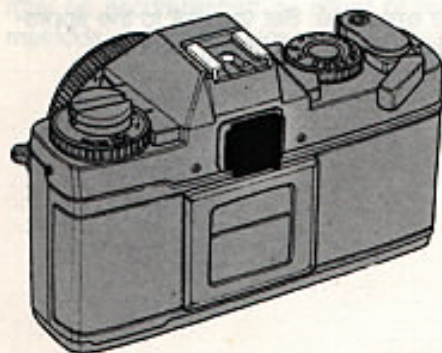
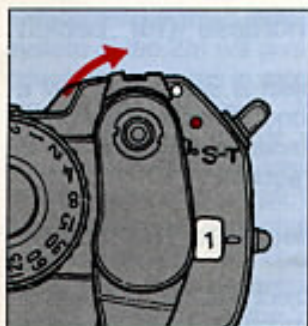
Exposure increase (for backlit subject):

When the subject is situated against a bright background, exposure must be increased to compensate. Set the dial to +1 or +2 as required.

Exposure decrease (for frontlit subjects):

When your subject is spotlighted against a dark background such as on stage, best results are obtained by decreasing the exposure. Set the dial to the appropriate -1 or -2 setting.

Self-timer



1. Set the main switch to "S-T" The film should be advanced either before or after this adjustment. The self-timer will not function unless the film is advanced.

2. The self-timer will start when the shutter release button is pressed, releasing the shutter after a period of approximately ten seconds. While the self-timer is in operation, an LED will flash and the buzzer will sound intermittently. The LED flashes twice a second for the first 8 seconds, changing to 4 times a second during the last 2 seconds as a warning that the shutter is about to be released.

- Before shooting, cover the viewfinder eyepiece with the hot-shoe/eyepiece cover to prevent light from entering via the eyepiece. Failure to do so may cause the photograph to be incorrectly exposed as a result of extraneous light entering from the back.
- The self-timer can be halted even after the countdown has started by setting the main switch to "On" or "OFF".
- If the shutter release button is pushed again while the self-timer is operating, the shutter will be released after an interval of 10 seconds.
- The self-timer cannot be used when the shutter speed dial is set to "B".

Flash Photography



1. Clip-on type flash units (the Mamiyalite ZE or MZ 18R) are mounted directly on the hot shoe. For grip type units (the Mamiyalite MZ 36R), a sensor base must be attached to the hot shoe. A sync cord is not required.

2. Set the shutter speed dial to the "A" or "AEL" position.

3. The Mamiyalite will be fully charged a few seconds after the switch is turned on. If you maintain light pressure on the shutter release button while the flash unit is being charged, the LED display will shift from the shutter speed for natural light conditions to 1/60 sec. as soon as the flash is fully charged.

When the shutter speed dial is at a manual speed between 1/1000 sec. and 1/125 sec., the camera automatically synchronizes for flash at 1/60 sec. on charging. When the dial is set between 1/60 sec. and 2 sec., the shutter will be

released at the selected speed. Light pressure on the shutter release button will cause an LED to appear at the shutter speed setting. When the flash is fully charged, an LED will start to flash at the "60" setting. (When the speed is set to 1/60 sec., the LED will light up without flashing.)

4. Set the lens to the aperture indicated by the flash unit and start taking photographs as explained in detail in the Mamiyalite instructions. The Mamiyalite is a series control type automatic electronic flash, so energy is saved at close distances. The remaining energy is stored in a capacitor until the flash is recharged, shortening recycle times and extending battery life.

• The Mamiyalite MZ 18R or MZ 36R will not flash if the switch on the flash unit is set to "MZ-AUTO". Use either the "AUTO" or "MANUAL" setting.

Mamiya Winder ZE

Warning about using other makes of flash unit

Mamiya Camera will not be responsible for any damage caused to the camera by flash units which are not Mamiya products. The electrical contacts and input/output, including high voltage trigger outputs, of flash units specifically designed for cameras made by other companies may cause severe damage to your Mamiya Camera.



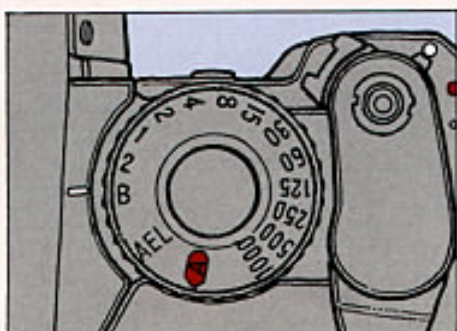
Mounting the Mamiya Winder ZE on the camera eliminates the need to advance the film manually. Photographic opportunities can be captured more easily because there is no need to take the eye away from the viewfinder to advance the film.

Continuous sequence photography is possible at the rate of approximately 2 frames per second merely by holding down the shutter release button.

When the camera is used with the Mamiya Winder ZE with the shutter speed dial set in the "A" position, each frame will be correctly exposed even if the light conditions change, as in panning, for example. AE Lock photography is also possible, but all photographs in any single sequence will be exposed at the value determined by the camera for the first frame. Use only as required.

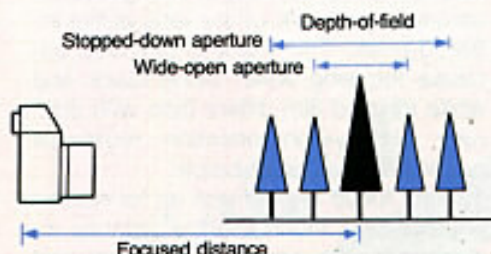
Single frames can be taken simply by removing the finger from the shutter release after each shot.

B (bulb) Exposure



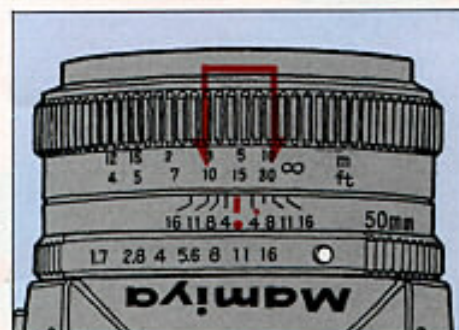
Set the shutter speed dial at the "B" (bulb) for exposures longer than 2 sec. At this position the shutter will remain open as long as the shutter release button is held down. The use of a cable release and tripod is recommended to prevent camera shake.

Depth-of-Field



When the camera is focused on a subject, a certain distance in front and back of the subject is also in relatively sharp focus. This is called the depth-of-field and increases as the lens aperture is stopped down while it decreases as the lens is opened up to larger apertures.

To render a background in sharp focus, or to allow snap-shooting without the bother of pinpoint focusing, the lens can be stopped down to increase the depth-of-focus. Opening up the lens aperture appropriately enables a subject to be rendered in sharp detail against a pur-

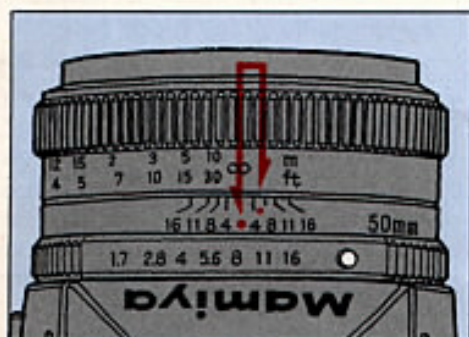


posely blurred background or foreground.

The depth-of-field range can be determined using the depth-of-field scale of the camera lens. Once the desired aperture is selected, the corresponding figures on both sides of the center index mark indicate the depth-of-field for that aperture on the distance scale.

For example, if the camera is focused at 15ft (5m) at an aperture of f/11, the range from approximately 10ft (3m) to 30ft (10m) will also be in sharp focus.

Infrared Photography



The red dot (or red line) to the right of the center index mark of the lens is the infrared mark. This mark is provided because focusing when using black and white infrared film differs than with ordinary films. Compensation must be applied as explained below.

1. First focus the camera as for normal photography; then read the distance indicated by the center index mark and move this value to the infrared mark position.

2. A red filter should also be used with infrared film so refer to the film instructions concerning exposure.

- There is no need for focus compensation when using color infrared films. Use the filters recommended in the film instructions.

Accessories



Accessories

Mamiya Winder ZE

Mounting the Mamiya Winder ZE on the camera eliminates the need to advance film manually. Photographic opportunities can be captured more easily because there is no need to take the eye away from the viewfinder for film advance. Single frame photography is easy by simply removing the finger from the shutter release after each shot.



Continuous sequence photography is possible at the rate of approximately 2 frames per second by merely holding down the shutter release button.

Power source: Four AA-size alkaline or rechargeable Ni-Cad batteries.

Lens Hoods ZE

Mamiya lens hoods are an important accessory for getting the best possible performance from the camera lens because they minimize the entry of stray light which can cause internal reflection and lead to flare or ghost images. Always use the lens hood designed for the specific focal length of the lens being used.

Filters

Mamiya filters are made of high-quality optical glass to maintain the high performance of the camera lens. They are available in the following five types: SY48 (Y2), SO56 (O2), SL39 (UV), YG, and SL-1B (skylight).

Diopter Correction Lenses ZE

Far- and near-sighted people sometimes find it difficult to focus a camera due to the optical characteristics of the viewfinder system. This situation, however, can easily be remedied by using a diopter correction lens and adapter. These diopter correction lenses are available in six different strengths: +3, +2, +1, -1, -2 and -3. Before purchasing a diopter correction lens at your Mamiya dealer, be sure to actually try various strength diopter lenses and select the one that suits your eyesight.

Mamiyalite MZ 36R

This is a grip type series control automatic electronic flash unit. Its system of flash intensity adjustment permits a choice of 3 different flash aperture settings. In the manual mode, the flash intensity can be adjusted in five steps from 1/16 to full intensity. The flash can be set to the desired angle for bounce and close-up photography.

Guide number: 36 (ASA/ISO 100-m)

Angle of coverage: Vertical – 45°, horizontal – 60°

(Attaching the wide-angle diffuser provides coverage for a 28mm wide-angle lens.)

The flash can be rotated 90° upwards, 180° to the left and 150° to the right.

Batteries: 8 AA-size alkaline or Ni-Cd batteries

Mamiyalite MZ 18R

The MZ 18R is a clip-on type electronic flash unit. If you set the lens aperture for flash according to the speed of the film in use, it is not necessary to adjust the aperture for each change in distance so long as the subject remains within the unit's effective flash range. Naturally, manual flash photography is also possible.

Guide number: 18 (ASA/ISO 100-m)

Angle of coverage: Vertical – 45°, horizontal – 60°

(Attaching the wide-angle diffuser provides coverage for a 28mm wide-angle lens.)

Batteries: 4 AA-size alkaline or Ni-Cd batteries

Mamiyalite ZE

This is a clip-on type lightweight and compact electronic flash unit. It has 2 flash aperture settings and manual flash photography is also possible.

Guide number: 17 (ASA/ISO 100-m)

Angle of coverage: Vertical – 45°, horizontal – 60°

(Attaching the wide-angle diffuser provides coverage for a 28mm wide-angle lens.)

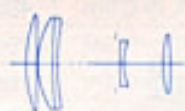
Batteries: 4 AA-size alkaline or Ni-Cd batteries

Macro
50mm f/3.5

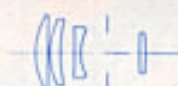


Auto macro
spacer ZE

135mm f/2.8



135mm f/3.5



200mm f/4



Zoom 80 - 200mm f/3.8



300mm f/4

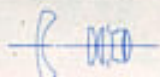


Mamiya-Sekor E/EF Lenses

28mm f/2.8



28mm f/3.5



35mm f/2.8



50mm f/1.4



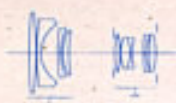
50mm f/1.7 S



50mm f/2 S



Zoom
28 - 50mm f/3.5 - 4.5



Zoom
35 - 70mm f/3.5 - 4.5



Zoom 70 - 150mm f/3.8



Mamiya-Sekor E/EF Lenses

	Lens	Construction		Angle of view	Mini. aperture	Mini. focusing distance	Filter size	Lens hood	Weight
		Groups	Elements						
EF Series	35mm f/2.8	6	6	63°	22	1.5ft. or 0.4m	49mm	Screw-in	5.1oz. (145g)
	50mm f/1.4	6	7	47°	16	1.5ft. or 0.45m	49mm	Screw-in	7.1oz. (200g)
	50mm f/1.7	5	6	47°	16	1.5ft. or 0.45m	49mm	Screw-in	5.3oz. (150g)
	135mm f/2.8	4	5	18°	22	5ft. or 1.5m	52mm	Built-in	10.9oz. (310g)
E Series	28mm f/2.8	7	8	74°	22	1ft. or 0.3m	49mm	Screw-in	5.8oz. (165g)
	28mm f/3.5	5	5	74°	22	1ft. or 0.3m	49mm	Screw-in	4.9oz. (140g)
	35mm f/2.8	6	6	63°	22	1.5ft. or 0.4m	49mm	Screw-in	5.1oz. (145g)
	50mm f/1.4	6	7	47°	16	1.5ft. or 0.45m	49mm	Screw-in	7.1oz. (200g)
	50mm f/1.7 S	5	6	47°	16	1.5ft. or 0.45m	52mm	Screw-in	5.3oz. (150g)
	50mm f/2 S	4	6	47°	16	1.5ft. or 0.45m	52mm	Screw-in	5.1oz. (145g)
	Macro 50mm f/3.5	4	5	47°	22	0.75ft. or 0.22m	49mm	Screw-in	7.1oz. (200g)
	135mm f/2.8	4	5	18°	22	5ft. or 1.5m	52mm	Built-in	10.9oz. (310g)
	135mm f/3.5	4	4	18°	22	5ft. or 1.5m	49mm	Built-in	10.1oz. (285g)
	200mm f/4	5	5	12°	32	7ft. or 2m	52mm	Built-in	14.3oz. (405g)
	300mm f/4	4	5	8°	32	18ft. or 5m	77mm	Built-in	25.7oz. (730g)
	Zoom 28-50mm f/3.5-4.5	8	9	74°-47°	22	2ft. or 0.6m	55mm	Screw-in	10.2oz. (290g)
	Zoom 35-70mm f/3.5-4.5	6	7	63°-34°	22	1.75ft. or 0.5m	55mm	Screw-in	13.8oz. (390g)
	Zoom 70-150mm f/3.8	9	12	34°-17°	32	3.5ft. or 1m	52mm	Built-in	17.5oz. (495g)
	Zoom 80-200mm f/3.8	10	14	30°-12°	32	4ft. or 1.3m	58mm	Screw-in	26.5oz. (750g)

Precautions on Batteries

The Mamiya ZM has a built-in circuit that automatically gives a warning when battery power is running low. In this case, the LED corresponding to the correct shutter speed flashes and a warning buzzer sounds at the rate of 2 times per second when the shutter release button is lightly pressed.

The batteries should be replaced as quickly as possible, although several exposures can still be made. When the batteries go completely dead, the LEDs won't light at all.

- Batteries should always be removed when the camera is not to be used for an extended time. Keep them in a cool, dry place. Leaving batteries in the camera for long periods may result in leakage which could damage the internal mechanisms.
- When replacing batteries, use 1.5V alkaline-manganese batteries LR44 (A-76), or silver oxide batteries SR44 (G-13). Although 1.3V mercury batteries are the same shape and size, they will not operate the camera normally.
- Be sure to replace both two batteries at the same time. Do not mix new and old batteries or batteries of different types or brands.
- When loading batteries into the battery cartridge, be sure the plus and minus terminals are located properly. Before loading the batteries, be sure to wipe the terminals of the batteries and the cartridge with a dry cloth to remove any soiling or finger marks, etc.
- Never take apart batteries, short them, or throw them into fire.

Handling Cautions

When the camera is not in use, the main switch should be left in the "OFF" position. If the camera's main switch is left in the "ON" position, the LEDs will light up whenever the shutter button is depressed, causing premature battery exhaustion.

The depth of the tripod socket is 2-3/16 in. (5.5mm). If a tripod is used with a mount screw longer than this, the internal mechanisms of the camera may be damaged. Do not use excessive force when mounting the camera on a tripod.

Avoid strong vibration and shock since this may cause adverse influence on the delicately adjusted parts of the camera. Be careful not to drop the camera or allow it to strike against objects.

Do not keep the camera for extended periods where temperature is above 100°F (40°C) or below 5°F (-15°C), or where there is excessive humidity or salt in the air. The camera mechanism or film can also be damaged if the camera is left for a long time in a place where there is naphthalene or formalene gas. Always store color film at the designated temperature.

Never touch the surface of the mirror or lens with the hands. Any dust should be blown off with a blower or wiped off by lightly applying a soft cloth. Be especially sure to never rub the surface of the mirror.

Always clean the camera carefully after photographing at the beach or other place where there is salt in the air. Clean the many plastic parts by gently wiping with a soft, dry cloth. Never use solvents when cleaning. Inspect the camera periodically when it is not being used. Be sure to inspect moving parts before trying to take important photographs. This includes the film advance and shutter operation, electronic flash synchronization, etc. Test shots should also be taken if possible to discover any irregularities that may exist. (Incidental damage which results in this camera malfunctioning will not be compensated.)

Do not try to repair or lubricate the camera if some irregularity is discovered. Leave this to your Mamiya dealer.

Specifications

Type of camera: 35mm single-lens reflex (SLR), aperture priority automatic exposure camera with manual override.

Picture format: 24mm × 36mm.

Usable lenses: Mamiya-Sekor E series and EF series lenses

Shutter: Electronically controlled metal focal plane. Speed range from 4 sec. to 1/1000 sec. at AUTO position and 2 sec. to 1/1000 sec. at MANUAL and B (bulb).

Camera shake warning: A buzzer sounds intermittently when the shutter speed drops below the slowest safe speed for hand-held shooting according to the lens used on the camera in the Auto/AEL mode.

Self-timer: Approx. 10-second delay; timer operation signalled by buzzer and flashing LED.

Sync contact: X-sync on a hot-shoe.

Metering system: TTL center-weighted, open-aperture metering using SPD (silicon photo diode)

Metering range: EV0.5 - EV18 (ASA/ISO 100, f/1.7 lens)
EV1 - EV18 (ASA/ISO 100, f/2 lens)

Exposure compensation: ±2 f-stops

Film speed range: ASA/ISO 12 - 3200

Viewfinder information display: LED dot displays indicate shutter speeds of 1 - 1/1000 sec., plus B and LT. Flashing LEDs and an intermittent buzzer warn of over- and under-exposure and battery exhaustion.

In manual mode; An LED dot lights at the speed set for

manual shutter speed. If the speed setting is different from the exposure automatically calculated by the camera, another LED flashes at the later speed.

Viewfinder magnification ratio: 0.85X with 93% coverage of field of view (with 50mm lens at infinity).

Focusing screen: Fixed split/microprism type with matte field.

Film advance: Using film advance lever with 130° winding angle and 30° stand-off angle.

Exposure counter: Additive type. Automatic reset to "S" mark when camera back is opened.

Film rewind: Manual rewind with rewind lever.

Power source: Two 1.5V alkaline-manganese LR44 (A-76) batteries or two 1.5V silver oxide SR44 (S-76, G-13, etc.) batteries.

Power switch: Main switch and shutter release button.

Flash synchronization: When using a Mamiyalite with the camera on Auto or Manual and adjusted to 1/125 - 1/1000 sec, the shutter speed is automatically set to 1/60 sec. when the flash is fully charged.

Winder coupling: Electrical contact and coupler built in for operation with the Mamiya Winder ZE.

Dimensions: 140mm (W) × 88mm (H) × 52mm (D)

Weight: 480 g

* Specifications and design are subject to change without notice.

① Rubber Eye-cup ZE with Adapter

This adapter is required for attaching the diopter correction lenses to the camera. The rubber eye-cup helps to prevent stray light entering the viewfinder while taking photographs.

To attach the diopter correction lens, first remove the mounting ring located inside the eye-cup by turning it counter-clockwise; then put the lens in place and replace the ring.

② Magnifier ZE

The magnifier is a useful aid for critical focusing as required in copy work, close-up photography, and similar applications. The size of the image is doubled and only the center part is visible for more accurate work. The magnifier also features diopter adjustment from -5 to +5.

③ Angle Finder ZE

The angle finder is useful when shooting at low angles and for copy work. Click stops are provided every 90°, but full 360° rotation is possible for viewing even from the side or from below. The angle finder also features built-in diopter adjustment from -4 to +4.

④ Close-up Lens ZE

The close-up lenses ZE are convenient attachment lenses which screw directly to the filter threads of the master camera lens enabling swift and easy conversion to close-up photography.

Two models are available: Close-up lens No. 1 having +2 diopters, and Close-up lens No. 2 having +4 diopters.

Diameter of threads: 49mm

⑤ Auto Extension Rings ZE

A set of three extension rings are intended for close-up photography and mount between the camera body and lens, directly coupling with the ZM camera metering system and the lens automatic diaphragm. Three different lengths of the rings can be used individually or in combination.



⑧ Bellows Stand ZE

Used with the Auto Bellows, the Bellows Stand is used for copying small objects such as stamps, coins, insects, etc. Clips are provided for holding subjects on the platform. And the platform rotates for precise positioning. The platform is also finished to provide 18% reflectance, convenient for measuring exposures. A clear glass platform is also included for back-lighting of subjects.



⑨ Microscope Adapter ZE

The microscope adapter ZE is designed to permit photomicrography using Mamiya's ZE Series cameras. It serves to connect the camera body to the microscope, allowing the magnified image to be observed through the viewfinder of the camera. Photomicrography becomes easy, with no problems of parallax or exposure compensation.



⑩ 645 Adapter ZE

The 645 Adapter ZE is an adapter designed to allow the 645 lens to be mounted onto the ZE series camera. It combines the high-performance lens of medium-format cameras with the rapid-shooting capabilities of the 35 mm camera to enable AE photography based on stopped-down aperture metering.

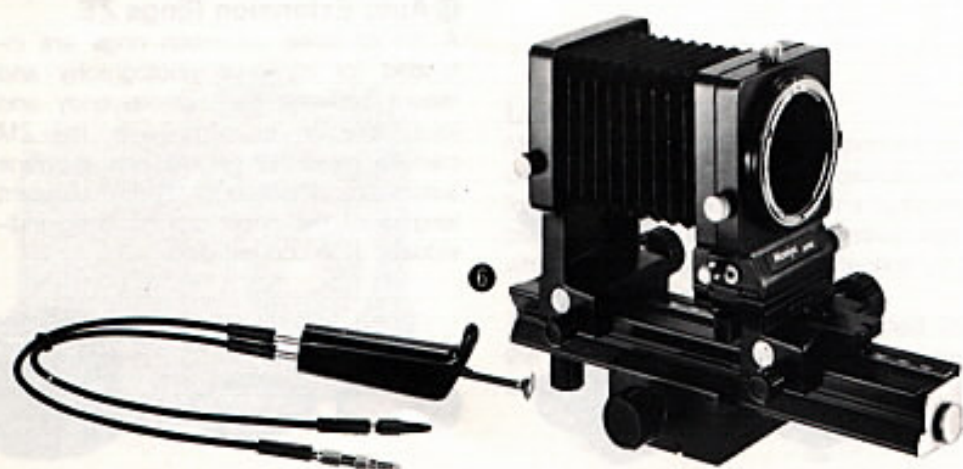


Accessories

⑥ Auto Bellows ZE

This is an easy to operate, precision bellows type close-up attachment. Automatic aperture stop-down coupling is possible using a double cable release. And the front standard can be swiveled 360°, permitting simple reversing of the lens for large magnification ratios with images that are sharp to the very edges.

Shift control also enables control of perspective. And the camera can also be rotated at the back for a choice of vertical or horizontal format with easy operation. The focusing rail allows the entire bellows unit to be shifted back and forth for sensitive adjustment of distance and focusing.



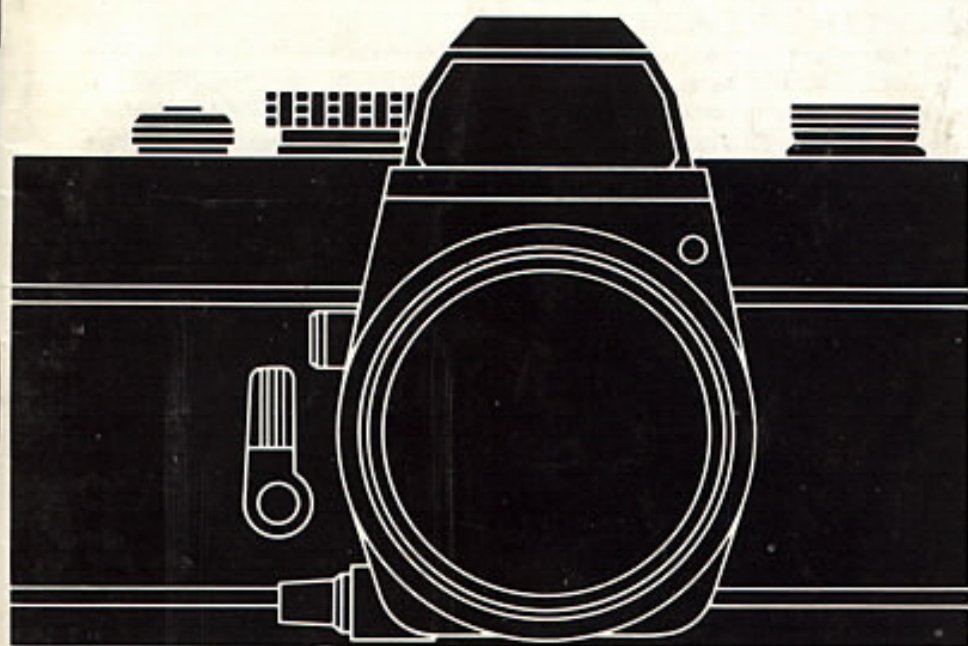
31

⑦ Slide Copier ZE

This device is mounted on the front of the Auto Bellows for making copies of slides. Convenient film trays are provided for copying film strips. The slide stage also moves vertically and horizontally for easier cropping of 35mm slides.



MINOLTA SRT 303



OWNER'S MANUAL

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MORE ADVANCED GUIDES

Depth of field

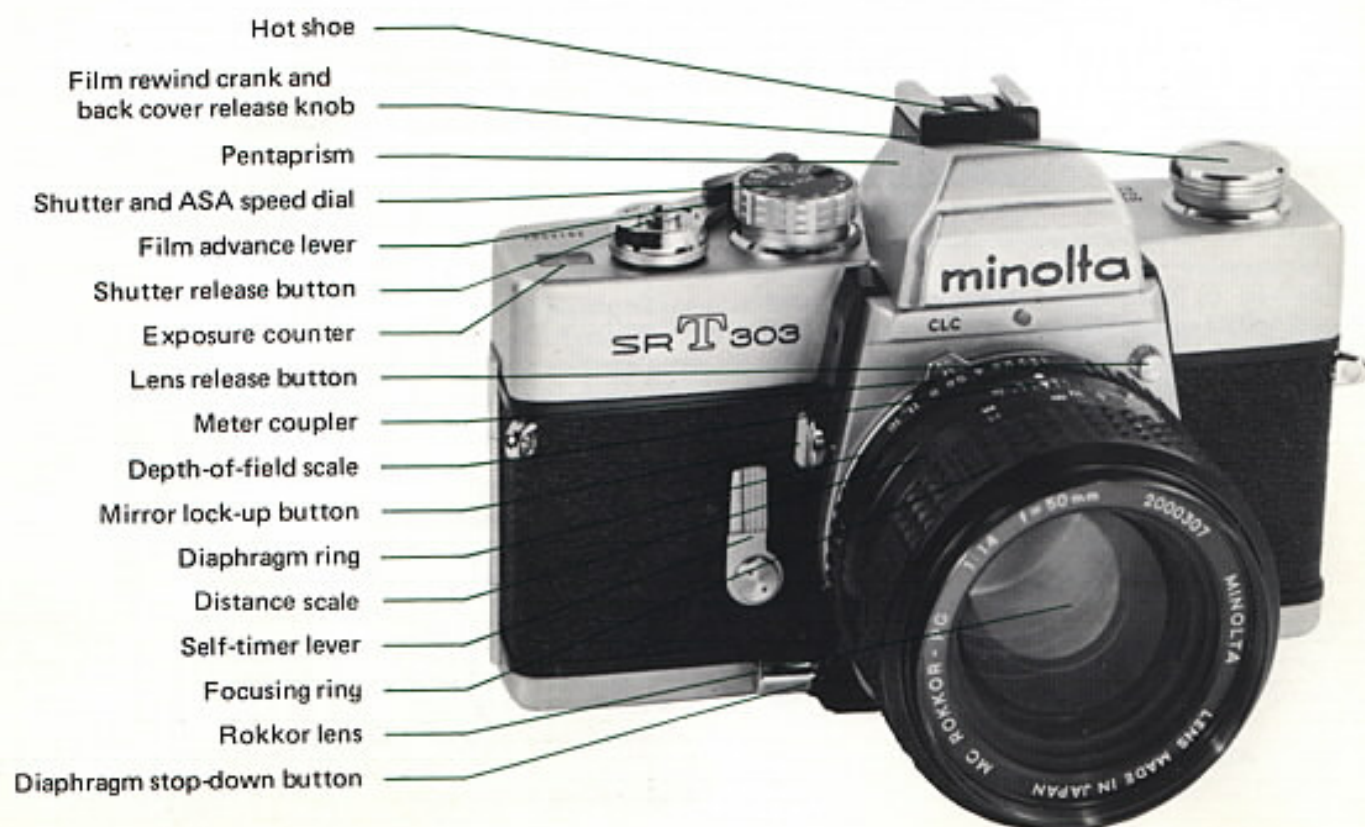
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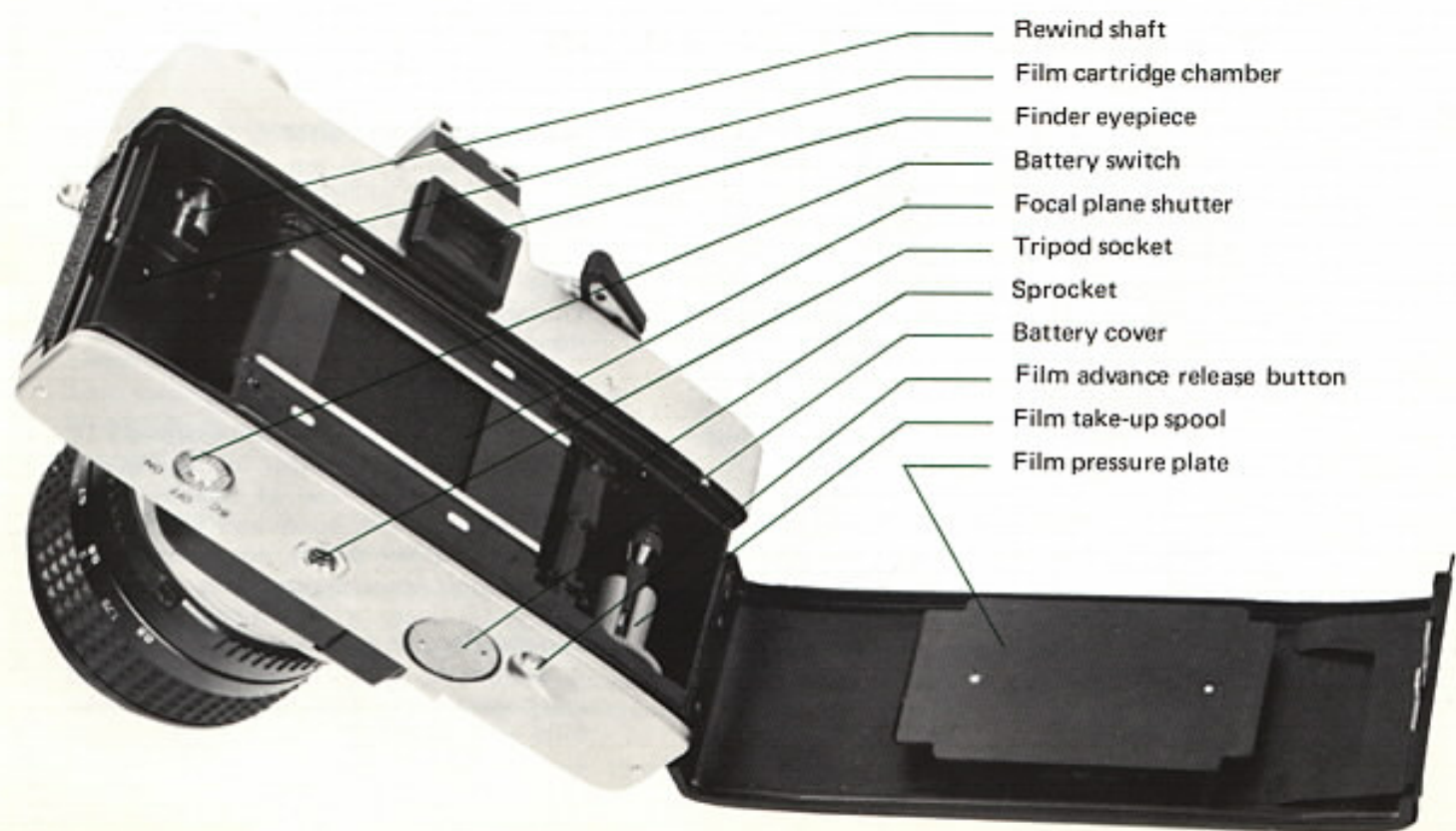
USING INTERCHANGEABLE ROKKOR LENSES OTHER THAN MC LENSES

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CARE AND STORAGE

NAMES OF PARTS





- Rewind shaft
- Film cartridge chamber
- Finder eyepiece
- Battery switch
- Focal plane shutter
- Tripod socket
- Sprocket
- Battery cover
- Film advance release button
- Film take-up spool
- Film pressure plate

MAJOR FEATURES OF THE MINOLTA SR-T 303

1. **Better Through-the-Lens Exposure System**
 - a) Exposure readings are taken with the lens at full aperture for greatest metering accuracy and best viewing and focusing.
 - b) Since only the light to strike the film is measured, there is no need to compensate for filters, greater-than-normal lens extension, etc.
 - c) The exclusive CLC metering system combines advantages of spot and averaging types to yield optimum exposure even in high-contrast lighting situations.
2. **"Information-Center" Viewfinder**
 - a) Meter and follower needles in the viewfinder show correct exposure setting at a glance.
 - b) Both shutter speed and F-number set are visible without taking your eye from the finder.
 - c) Focusing virtually any kind of subject is facilitated by the new focusing aid that employs a split-image spot and a microprism band.
3. **Multiple-Exposure Capability**

Creative possibilities are greatly expanded by the 303's ability to make multiple exposures simply and positively.
4. **Direct-Contact "Hot Shoe"**

This accepts either cordless units or conventional ones with cords.
5. **World-Renowned Rokkor Lenses**

MC Rokkor Lenses permit full-aperture TTL operation, while any other interchangeable Rokkor ever made can be used with the stop-down method. Either way you benefit from top Rokkor quality, computer design, and exclusive Achromatic coating.
6. **Complete System Accessories**

A full line of quality Minolta and adapted Leitz accessories makes for maximum versatility with the 303.

SPECIFICATIONS OF THE MINOLTA SR-T 303

5

—35mm single-lens-reflex camera with through-the-lens exposure metering—

Standard lens MC Rokkor 50mm F1.4 (F1.7 or 58mm F1.2) equipped with meter coupler

Composition: 7 elements in 5 groups
Coating: Achromatic coating
Angle of view: 47° with 50mm lens (41° with 58mm lens)
Diaphragm: Fully automatic
Diaphragm scale: (1.2), 1.4, (1.7), 2, 2.8, 4, 5.6, 8, 11, 16 with equal-space and intermediate click F-stops
Filter/shade mount: Ø55mm, screw-in
Lens mount: Minolta bayonet mount

Shutter Focal-plane type

Speeds: B, 1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500, and 1/1000 sec.
Selector dial: Single, non-spinning, equal-space, click stop dial
Sync. terminal: Single terminal with X/FP selector switch
Self-timer: Time adjustable, 10 sec. maximum delay

Film advance Lever type, quick advance winding with shutter cocking and double exposure prevention

Winding method: Single-or multiple-stroke, with 20° free clearance
Winding angle: 150°
Frame counter: Automatic resetting counter showing number of exposed frames
Film rewinding: Rapid rewinding with crank
Frame size: 36 x 24mm
Film: Standard 35mm film, 12, 20, or 36 exposures

Viewfinder Real-image type through fixed, eye-level pentaprism; exposure-control needles (follower system), battery check mark, shutter speed scale, and F-number visible in finder

Focusing screen: Mat Fresnel with a $\phi 2.5\text{mm}$ central horizontally oriented split-image spot surrounded by a microprism band 1.5mm wide

Exposure meter Through-the-lens metering system

Exposure meter: Contrast light compensator (CLC) with two CdS cells on the pentaprism

Measurement: Measuring at full aperture coupled to shutter speed, aperture and film speed setting

Control: Follower-needle system viewed in the finder

Working range: EV 3 to EV 17 with ASA 100 film

Diaphragm button: Depth-of-field preview button for MC Rokkor Lenses; measuring (stop-down) button for other than MC Rokkor lenses

Film speed range: ASA 6 – 6400, DIN 9 – 39

ASA setting: On shutter speed dial; built-in ASA/DIN conversion scale on camera back

Battery: 1.35v mercury battery, Mallory PX-625 or equivalent

Switch: ON, OFF, and battery check switch on base of camera

Focusing Bright-screen with micro-split and fine ground glass

Focusing distance: 50cm (1.75 ft.) to infinity

Focusing method: Direct helicoid focusing with infrared index

Mirror Oversize quick-return mirror with lock-up device

Others Built-in accessory hot shoe

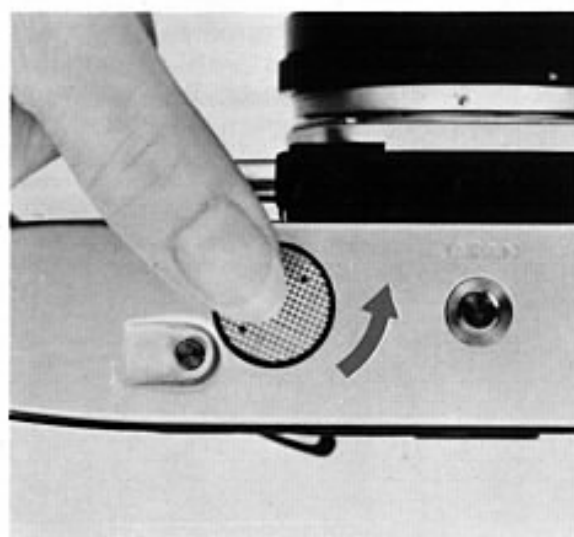
Size and weight Body only

Width 145mm (5-3/4"); Depth 47.5mm (1-7/8"); Height 95mm (3-3/4"); 710g (25 oz.)

PREPARATIONS BEFORE TAKING PICTURES

Inserting the mercury battery

1. The Minolta SR-T 303 uses a 1.35v, button-shape mercury battery for photographic applications (Mallory PX-625, PX-13, Eveready EXP-625, EPX-13 or equivalent).
2. To install, remove the battery chamber cover with your thumb by turning it counterclockwise. Place the battery in the chamber with its plus side out and replace the cover.



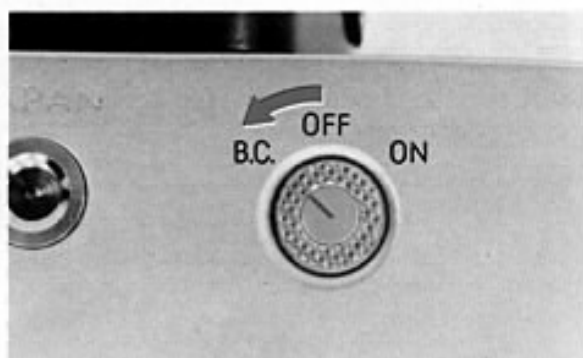
**CAUTION:**

- Do not touch the battery terminals with moist or dirty hands, as this can cause them to deteriorate and make the battery inoperative.
- Do not discard a mercury battery in a fire or break it up.
- When the camera is not being used, it is advisable to turn the battery switch on the base of the camera to the "OFF" position.
- If the camera is not to be used for over a month, remove the battery and store it in a dry, cool place.
- Before putting the battery back in the camera, clean both sides of the battery and the contact lead of the battery chamber with dry cloth.

Checking the battery power

The battery checker is designed to check the output of the mercury battery. By taking a few seconds to check battery output before starting each new roll of film, and particularly when using the camera after it has been stored for an extended period of time or a new battery has been inserted, you can avoid poor exposure due to insufficient electric power.

1. Turn the battery switch on the base of the camera to the "B.C." position.



2. If the indicator needle points to the battery check mark as shown in the picture, the battery can be regarded as functioning properly.

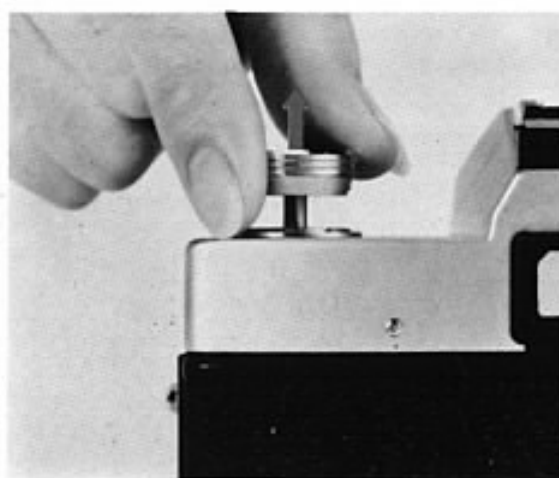
CAUTION:

- Do not leave switch setting at battery check position as the continuous high battery drain will cause the battery to go "dead" in a few hours.

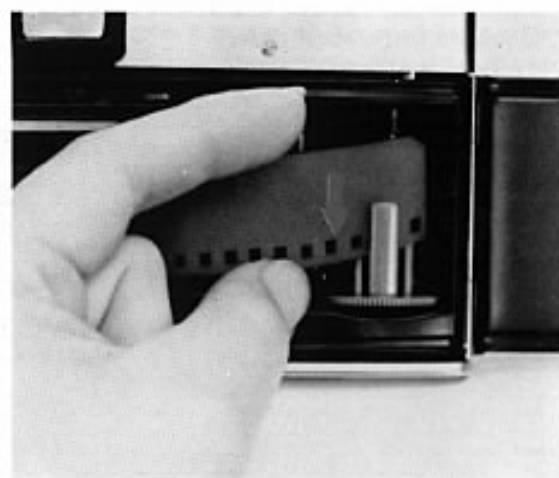


Loading film

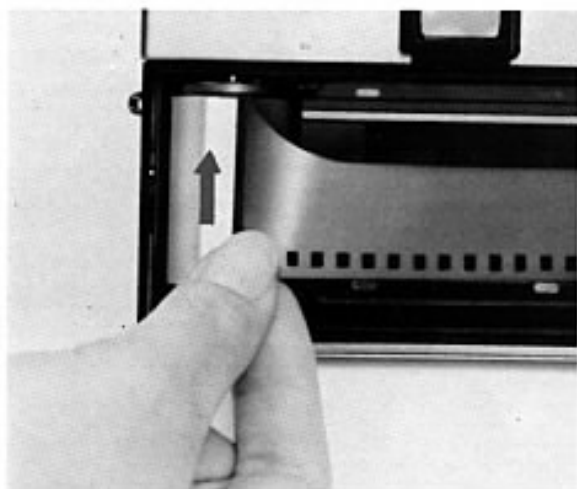
1. Raise the back cover release knob (which also incorporates the film rewind knob) until some resistance is felt. With a slight additional pull, the back cover will automatically "pop" open.



2. Insert the film leader into a slot in the film take-up spool as shown.



3. Place the film cartridge into the film cartridge chamber and push the back cover release knob all the way down. (When inserting the film cartridge, its projecting center drum must be placed in a downward position.)

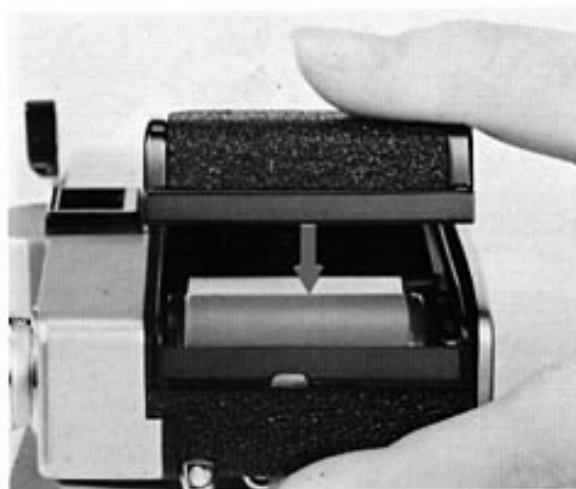


4. Operate the film advance lever in several short strokes until the film has begun to wind firmly around the take-up drum and both sides of the film perforations are securely engaged with the teeth of the sprocket gear. If the film advance lever locks during this procedure, press the shutter release button and then continue.



5. Close the camera back once you are certain that the film is winding securely on the take-up spool and engaged with on both sprockets.

Rotate the film rewind crank gently in the direction of the arrow to make sure that the film is flat against the pressure plate.



6. Advance the film and press the shutter release button. Repeat this action until the number "1" appears at the arrow mark in the exposure counter window.



NOTE:

- The frame counter indicates the number of pictures taken from 1 to 36.
- The film advance lever has a total "throw" of 170° ; of this distance, the first 20° have no effect on the film but are intended to provide a "free play" range through which the lever may be "offset" from the body for rapid shooting.
- When the camera back is opened, the counter automatically resets itself to the start (S) position.

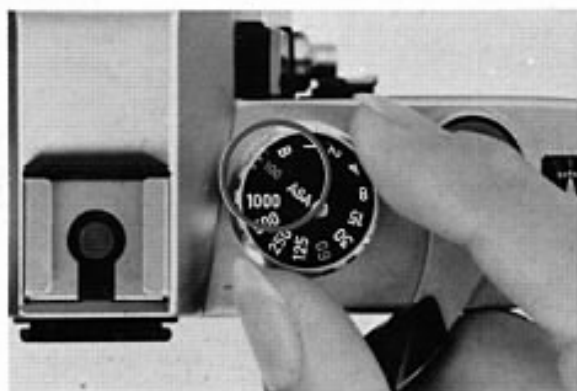


Setting ASA number (film speed)

Lift and rotate the shutter speed dial until the figure (6 to 6400) which corresponds with the ASA rating of your film is visible in the ASA window.

On the ASA dial the following figures are printed: 6 • 10 • 16 • 25 • 50 • 100 • 200 • 400 • 800 • 1600 • 3200 • 6400.

The dots (•) denote ASA 8, 12, 20, 32, 40, 64, 80, 125, 160, 250, 320, 500, 640, 1000, 1300, 2000, 2600, 4000, and 5200, respectively.



ASA/DIN conversion scale

To convert DIN film speed to the corresponding ASA value, use the conversion scale located on the back cover of the camera. (The inner numbers are DIN.)



TAKING PICTURES

TTL with CLC: A new exposure measuring system

The Minolta SR-T 303 camera has a through-the-lens measuring system with CLC meter.

Minolta's exclusive, revolutionary CLC "Contrast Light Compensator" promises better photographic results with multiple split exposure measuring system.

Under normal photo-taking conditions this new system gives excellent results; under other conditions, such as in high-contrast scenes, the CLC feature prevents possible photo failures.



Setting the correct exposure

When aiming the camera at your subject through the viewfinder, you will see the indicator needle moving. Once the indicator needle has stopped moving, turn the shutter speed dial and/or the diaphragm ring to align the follower needle (circle-tipped needle) with the indicator needle.



The shutter speed set is indicated in the viewfinder beneath the frame, while the F-number of the aperture set appears above the frame.



Shutter speed and aperture settings

The shutter speed (the period of time during which the shutter remains open) works in conjunction with the lens opening (aperture) to determine the amount of light striking the film. The higher the shutter speed, the more effectively it will momentarily "stop" the action of your subject.

To set shutter speed, simply rotate the shutter speed dial until the desired speed is aligned with the indicator on the camera body, or until it is centered between indicators on the shutter speed scale in the viewfinder.



The figure of B and 1 through 1000 on the shutter speed dial respectively indicate bulb action and shutter speeds from 1 to 1/1000th second. (At "B" the shutter will remain open until pressure is removed from the release button.)

The aperture setting controls the light reaching the film at any given shutter speed. In addition, it determines the "depth of field." (See page 25.)



When the proper combination of aperture and shutter speed setting is made for correct exposure, the follower needle (which is coupled to the aperture, shutter speed, and ASA speed settings) will align with the indicator needle over a range of EV 3 through EV 17 at ASA 100. The EV range will vary with film speed.

It is a recommended procedure to set the shutter speed first (depending on the motion or lack of motion of your subject or the overall lighting) and to then adjust the aperture.

If the needle fails to move when the diaphragm ring is rotated, this signals a need to adjust your shutter speed setting.

Since F-number and shutter-speed indications as well as meter and follower needles are continuously visible in the viewfinder, you can make all exposure adjustments and know exactly the settings you are making without taking the camera away from your eye.

CAUTION:

- When setting the aperture first, be sure not to set the shutter speed between click stops.
- When the shutter speed is set slower than 1/30th sec., be extremely careful of camera motion while releasing the shutter. It is recommended that a tripod be used at speeds of 1/30th sec. or slower. For "Bulb" setting, a cable release should also be used.
- When using high-speed film, a shutter speed of 1/250th sec. is recommended for outdoor photography, and 1/30th sec. for indoor use.
- When photographing a group of people or a building requiring great depth of field, close down the diaphragm as much as possible. See the "depth of field" on page 25 for details.
- All metering should be done in horizontal position.

Focusing the camera

The focusing screen of the Minolta SR-T 303 has a central horizontally oriented split-image spot surrounded by a circular microprism band. You can choose either of these focusing aids according to the subject and your preference.

In focus



To focus using the split-image spot, look through the viewfinder and turn the focusing ring on the lens until the upper and lower images in the split-image spot are exactly aligned with no broken lines between them.

For microprism focusing, turn the ring until the image is no longer broken up but appears clear in the microprism band.

Out of focus



The index for the aperture setting is the Triangular (Δ) symbol in front of the diaphragm ring. The ring is engraved with figures from 1.4 through 16 for the MC Rokkor 50mm F1.4 standard lens.

When other conditions remain constant, light passing through a lens generally decreases 50 percent for every full-stop increase in F-number (for example, when the aperture number of a fast lens is increased from F5.6 to F8, the light passing to the film decreases by 50 percent).

F-No.	1.2	1.4	2	2.8	4	5.6	8	11	16
Theoretical Light Volume	3	2	1	1/2	1/4	1/8	1/16	1/32	1/64



As the aperture figure decreases, the light passed increases. The theoretical relation between aperture and light volume is shown in the diagram. In practice, this varies somewhat at large or maximum apertures, but your SR-T 303 and MC Rokkor lenses have built-in compensation for this to give your most satisfactory exposure.

NOTE:

- "Click" stops are provided for half-stop aperture settings. Intermediate shutter speeds cannot be set.
- The figure "B" on the shutter speed dial is used when an exposure duration of over 1 second is required. The shutter will remain open while the shutter release is depressed.
- The red figure "60" on the shutter speed dial indicates the maximum shutter speed to be used in conjunction with electronic flash.
- The shutter speed at which the camera is set is shown on the shutter speed scale visible in the viewfinder.
- Since light striking the film is affected by a combination of aperture and shutter speed, exposure can be adjusted by changing either or both of these settings.

Holding the camera

The camera may be held horizontally or vertically. In either case, be sure to hold the camera in a comfortable position. This will help to prevent movement of the camera during exposure and avoid blurred pictures.

NOTE:

- Pressing the camera gently against your face, or supporting the elbow of the hand holding the camera against your body, will aid in steady holding.
- The camera will tend to move more when used in the vertical position.



Your Minolta SR-T 303 is wired for X or FP flash synchronization and has a single sync. terminal with a sync. selector switch. By turning the sync. selector switch to align its index with the appropriate indication, either direct contact cordless flashguns or units having cords can be used on it.

When using FP-class bulbs, turn the sync. selector switch to "FP," and you can use any shutter speed from 1 to 1/1000th sec.

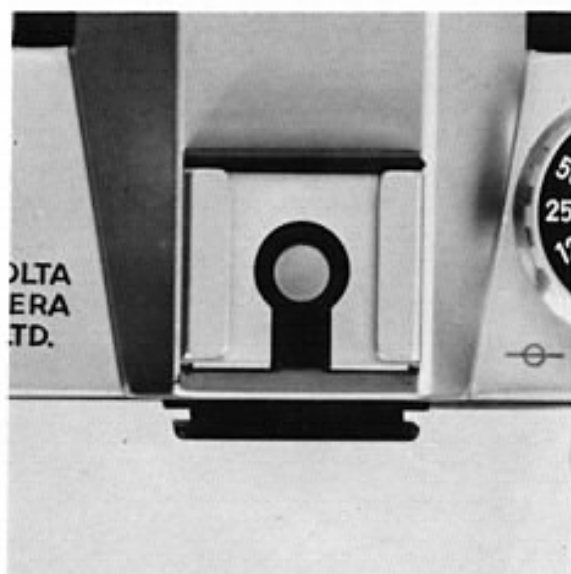
Speeds usable with other bulb classes are indicated below.

[illegible]

Attaching flash unit

Cordless clip-on flash units are connected by simply sliding them into the direct-contact "hot shoe" located on top of the pentaprism housing.

Sync. cords of either clip-on or bracket-type conventional units that have them must be plugged into the camera sync. terminal for operation.





Setting correct exposure

To determine the correct aperture for flash photography, get the "guide number" of the flash bulb you are using. Then make this simple computation:

$$\frac{\text{Guide Number}}{\text{Distance to Subject}} = \text{Aperture Setting (F-stop)}$$

For example, when flash bulb guide number is 80 (in feet) and the distance to the subject is 10 feet (with ASA 100 film, using shutter speed of 1/60th sec.),

$$\text{the F-stop is: } \frac{80}{10} = 8$$

NOTE:

- When using M-class flash bulbs, a shutter speed of 1/15th sec. or slower is recommended.
- Use "blue" flash bulbs generally for color photography.

MORE ADVANCED GUIDES

Depth of field

Lens aperture controls depth of field

When the lens is accurately focused on a subject, there is a certain depth both in the foreground and the background which is also considered to be in focus. This area is known as the "depth of field."

The sharp focus area in the foreground is usually shallower than the sharp focus area in the background.

Depth of field has the following characteristics which should be considered when pictures are composed:

1. As the lens aperture decreases, the area of sharp focus increases. As lens aperture increases, the area of sharp focus decreases.
2. As the distance from camera to subject is increased, so is the area of sharp focus.
3. A telephoto lens has a shallower depth of field than a wideangle lens.

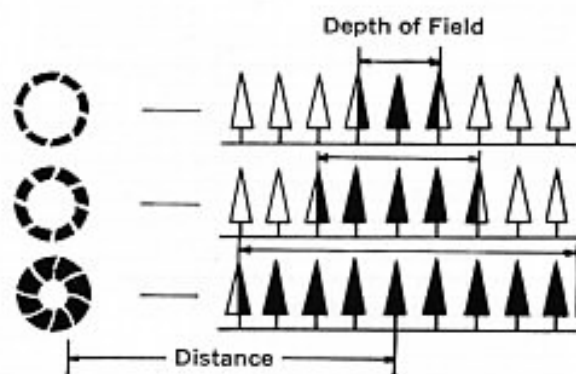
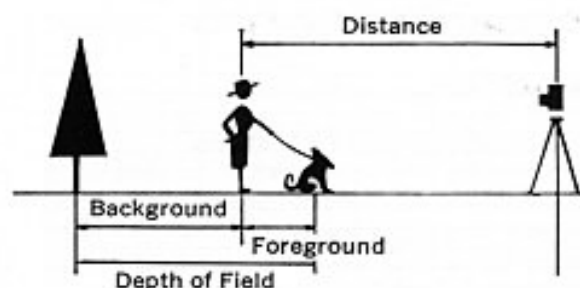
Full aperture opening



Small aperture opening



The depth-of-field scale engraved on lens barrel enables you to determine the depth of field in which focus will be acceptably sharp. For example, if you focus on a subject 15 feet away and use an F8 aperture, read the distance opposite the two figures 8. In this case the picture will be sharp from approximately 10 to 27 feet. (See page 27.)



Depth-of-field table of MC Rokkor 50mm F1.7 and F1.4 Lens (in feet)

Dist. (ft.) \ F No.	1.4	1.7	2.8	4	5.6	8	11	16
∞	∞ 189' 10"	∞ 155' 3"	∞ 95'	∞ 66' 6"	∞ 47' 7"	∞ 33' 4"	∞ 24' 3"	∞ 16' 9"
30	35' 7" 25' 11"	37' 1" 25' 2"	43' 7" 22' 10"	54' 2" 20' 9"	80' 1" 18' 6"	83' 11" 15' 11"	∞ 13' 6"	∞ 10' 10"
15	16' 3" 13' 11"	16' 7" 13' 9"	17' 9" 13'	19' 3" 12' 4"	21' 8" 11' 6"	26' 10" 10' 5"	38' 2" 9' 4"	130' 6" 8'
10	10' 6 $\frac{3}{8}$ " 9' 6 $\frac{3}{8}$ "	10' 7 $\frac{5}{8}$ " 9' 5"	11' 1 $\frac{1}{2}$ " 9' $\frac{5}{8}$ "	11' 8 $\frac{1}{4}$ " 8' 8 $\frac{1}{8}$ "	12' 6 $\frac{1}{8}$ " 8' 3 $\frac{3}{8}$ "	14' $\frac{5}{8}$ " 7' 9 $\frac{3}{8}$ "	16' 7 $\frac{5}{8}$ " 7' 2"	23' 10 $\frac{1}{8}$ " 6' 4 $\frac{1}{4}$ "
7	7' 3" 6' 9 $\frac{1}{8}$ "	7' 3 $\frac{3}{8}$ " 6' 8 $\frac{3}{8}$ "	7' 6 $\frac{1}{4}$ " 6' 6 $\frac{1}{2}$ "	7' 9 $\frac{1}{4}$ " 6' 4 $\frac{3}{8}$ "	8' 1 $\frac{3}{8}$ " 6' 1 $\frac{3}{4}$ "	8' 8 $\frac{3}{8}$ " 5' 10 $\frac{1}{8}$ "	9' 7 $\frac{1}{8}$ " 5' 6 $\frac{1}{8}$ "	11' 7 $\frac{1}{8}$ " 5' $\frac{1}{4}$ "
5	5' 1 $\frac{1}{8}$ " 4' 10 $\frac{3}{8}$ "	5' 1 $\frac{3}{4}$ " 4' 10 $\frac{1}{4}$ "	5' 3" 4' 9 $\frac{1}{8}$ "	5' 4 $\frac{1}{8}$ " 4' 8 $\frac{1}{8}$ "	5' 6 $\frac{3}{8}$ " 4' 6 $\frac{1}{8}$ "	5' 9 $\frac{5}{8}$ " 4' 4 $\frac{1}{8}$ "	6' 2 $\frac{1}{8}$ " 4' 2 $\frac{1}{8}$ "	6' 11 $\frac{1}{8}$ " 3' 11 $\frac{1}{8}$ "
4	4' $\frac{1}{8}$ " 3' 11 $\frac{1}{8}$ "	4' 1 $\frac{1}{8}$ " 3' 10 $\frac{1}{8}$ "	4' 1 $\frac{1}{8}$ " 3' 10 $\frac{1}{4}$ "	4' 2 $\frac{1}{8}$ " 3' 9 $\frac{1}{2}$ "	4' 3 $\frac{1}{8}$ " 3' 8 $\frac{3}{8}$ "	4' 5 $\frac{1}{8}$ " 3' 7 $\frac{1}{8}$ "	4' 8 $\frac{3}{8}$ " 3' 5 $\frac{3}{8}$ "	5' 11 $\frac{1}{8}$ " 3' 3 $\frac{1}{2}$ "
3.5	3' 6 $\frac{1}{8}$ " 3' 5 $\frac{1}{8}$ "	3' 6 $\frac{3}{8}$ " 3' 5 $\frac{3}{8}$ "	3' 7 $\frac{3}{8}$ " 3' 4 $\frac{3}{8}$ "	3' 8" 3' 4 $\frac{1}{8}$ "	3' 8 $\frac{1}{8}$ " 3' 3 $\frac{3}{8}$ "	3' 10 $\frac{5}{8}$ " 3' 2 $\frac{1}{8}$ "	4' $\frac{1}{8}$ " 3' 1 $\frac{1}{4}$ "	4' 3 $\frac{3}{8}$ " 2' 11 $\frac{1}{8}$ "
3	3' $\frac{1}{8}$ " 2' 11 $\frac{1}{2}$ "	3' $\frac{3}{8}$ " 2' 11 $\frac{3}{8}$ "	3' 1" 2' 11"	3' 1 $\frac{1}{8}$ " 2' 10 $\frac{5}{8}$ "	3' 2 $\frac{1}{8}$ " 2' 10 $\frac{1}{8}$ "	3' 3" 2' 9 $\frac{3}{8}$ "	3' 4 $\frac{3}{8}$ " 2' 8 $\frac{1}{2}$ "	3' 6 $\frac{3}{8}$ " 2' 7 $\frac{1}{8}$ "
2.5	2' 6 $\frac{3}{8}$ " 2' 5 $\frac{3}{8}$ "	2' 6 $\frac{5}{8}$ " 2' 5 $\frac{5}{8}$ "	2' 6 $\frac{5}{8}$ " 2' 5 $\frac{5}{8}$ "	2' 6 $\frac{5}{8}$ " 2' 5 $\frac{1}{8}$ "	2' 7 $\frac{3}{8}$ " 2' 4 $\frac{1}{8}$ "	2' 8" 2' 4 $\frac{1}{8}$ "	2' 8 $\frac{3}{8}$ " 2' 3 $\frac{3}{8}$ "	2' 10 $\frac{5}{8}$ " 2' 2 $\frac{5}{8}$ "
2	2' $\frac{3}{8}$ " 1' 11 $\frac{3}{4}$ "	2' $\frac{3}{8}$ " 1' 11 $\frac{3}{4}$ "	2' 3 $\frac{3}{8}$ " 1' 11 $\frac{3}{8}$ "	2' $\frac{3}{8}$ " 1' 11 $\frac{1}{8}$ "	2' $\frac{5}{8}$ " 1' 11 $\frac{1}{8}$ "	2' 1 $\frac{3}{8}$ " 1' 10 $\frac{3}{8}$ "	2' 1 $\frac{5}{8}$ " 1' 10 $\frac{1}{2}$ "	2' 2 $\frac{1}{2}$ " 1' 9 $\frac{3}{8}$ "
1.75	1' 9 $\frac{1}{8}$ " 1' 8 $\frac{1}{8}$ "	1' 9 $\frac{1}{8}$ " 1' 8 $\frac{1}{8}$ "	1' 9 $\frac{1}{8}$ " 1' 8 $\frac{1}{8}$ "	1' 9 $\frac{3}{8}$ " 1' 8 $\frac{3}{8}$ "	1' 9 $\frac{5}{8}$ " 1' 8 $\frac{3}{8}$ "	1' 9 $\frac{5}{8}$ " 1' 8 $\frac{1}{8}$ "	1' 10 $\frac{3}{8}$ " 1' 7 $\frac{1}{8}$ "	1' 10 $\frac{5}{8}$ " 1' 7 $\frac{1}{8}$ "

Depth-of-field table of MC Rokkor 50mm F1.7 and F1.4 Lens (in meters)

Dist. (m) \ F No.	1.4	1.7	2.8	4	5.6	8	11	16
∞	∞ 57.9	∞ 47.3	∞ 29.0	∞ 20.3	∞ 14.5	∞ 10.2	∞ 7.4	∞ 5.1
10	12.1 8.5	12.6 8.3	15.2 7.5	19.6 6.7	31.7 5.9	481.7 5.1	∞ 4.3	∞ 3.4
5	5.5 4.6	5.6 4.5	6.0 4.3	6.6 4.0	7.6 3.7	9.7 3.4	15.0 3.0	168.2 2.6
3	3.16 2.86	3.19 2.83	3.33 2.73	3.50 2.63	3.75 2.51	4.20 2.34	4.94 2.16	7.01 1.92
2	2.07 1.94	2.08 1.92	2.14 1.88	2.20 1.83	2.30 1.77	2.46 1.69	2.69 1.60	3.19 1.46
1.5	1.54 1.47	1.54 1.46	1.58 1.43	1.61 1.41	1.66 1.37	1.74 1.32	1.85 1.27	2.06 1.18
1.2	1.22 1.18	1.23 1.17	1.25 1.16	1.27 1.14	1.30 1.12	1.34 1.09	1.41 1.05	1.53 0.99
1.0	1.02 0.99	1.02 0.98	1.03 0.98	1.05 0.96	1.06 0.94	1.10 0.92	1.14 0.90	1.21 0.85
0.9	0.91 0.89	0.91 0.89	0.92 0.88	0.94 0.87	0.95 0.85	0.98 0.84	1.01 0.82	1.06 0.78
0.8	0.81 0.79	0.81 0.79	0.82 0.78	0.83 0.77	0.84 0.77	0.86 0.75	0.88 0.73	0.92 0.71
0.7	0.71 0.69	0.71 0.69	0.71 0.69	0.72 0.68	0.73 0.67	0.74 0.66	0.76 0.65	0.79 0.63
0.6	0.61 0.60	0.61 0.59	0.61 0.59	0.61 0.59	0.62 0.58	0.63 0.57	0.64 0.56	0.66 0.55
0.5	0.50 0.50	0.50 0.50	0.51 0.49	0.51 0.49	0.51 0.49	0.52 0.48	0.53 0.48	0.54 0.47

Depth-of-field table of MC Rokkor 58mm F1.2 Lens (in feet)

Dist. (ft.) \ F No.	1.2	2	2.8	4	5.6	8	11	16
∞	∞ 282'	∞ 171'	∞ 121'	∞ 85'	∞ 61'	∞ 43'	∞ 30'	∞ 22'
30	33' 6" 27' 2"	36' 3" 25' 7"	39' 9" 24' 1"	45' 11" 22' 4"	59' 20' 2"	98' 17' 9"	15' 2"	12' 8"
15	15' 10" 14' 3"	16' 5" 13' 10"	17' 1" 13' 5"	18' 1" 12' 10"	19' 9" 12' 1"	22' 9" 11' 3"	29' 10' 2"	47' 7' 9"
10	10' 4" 9' 8 1/8"	10' 7" 9' 6"	10' 10" 9' 3"	11' 3" 9'	11' 10" 8' 8"	12' 11" 8' 2"	14' 8" 7' 7"	18' 2" 6' 11"
7	7' 2 1/8" 6' 10 1/8"	7' 3" 6' 9"	7' 5" 6' 8"	7' 7" 6' 6"	7' 10" 6' 4"	8' 3" 6' 1"	8' 11" 5' 9"	10' 1" 5' 5"
5	5' 1 1/8" 4' 11"	5' 2" 4' 10"	5' 2" 4' 10"	5' 3" 4' 9"	5' 5" 4' 8"	5' 7" 4' 6"	5' 10" 4' 4"	6' 4" 4' 2"
4	4' 9/8" 3' 11 3/8"	4' 1" 3' 11"	4' 1" 3' 11"	4' 2" 3' 10"	4' 3" 3' 9"	4' 4" 3' 8"	4' 6" 3' 7"	4' 9" 3' 5"
3.5	3' 6 1/8" 3' 5 1/2"	3' 6 3/4" 3' 5 1/4"	3' 7" 3' 5"	3' 7 1/2" 3' 4 1/2"	3' 8 1/4" 3' 4"	3' 9 1/4" 3' 3 1/4"	3' 10 3/4" 3' 2 1/4"	4' 3/4" 3' 3/4"
3	3' " 2' 11 1/8"	3' 1/2" 2' 11 1/2"	3' 3/4" 2' 11 1/4"	3' 1" 2' 11"	3' 1 1/2" 2' 10 1/2"	3' 2 1/4" 2' 10"	3' 3 1/4" 2' 9 1/4"	3' 4 1/4" 2' 8 1/4"
2.5	2' 6 3/8" 2' 5 3/4"	2' 6 1/2" 2' 5 1/4"	2' 6 1/2" 2' 5 1/2"	2' 6 3/4" 2' 5 1/4"	2' 7" 2' 5"	2' 7 1/2" 2' 4 3/4"	2' 8 1/4" 2' 4 1/4"	2' 9" 2' 3 1/2"
2.25	2' 3 1/4" 2' 2 9/8"	2' 3 1/4" 2' 2 3/4"	2' 3 1/2" 2' 2 3/4"	2' 3 1/2" 2' 2 1/2"	2' 3 3/4" 2' 2 1/4"	2' 4 1/4" 2' 2"	2' 4 3/4" 2' 1 1/2"	2' 5 1/2" 2' 1"
2	2' 1 1/8" 1' 11 1/8"	2' 1 1/4" 1' 11 3/4"	2' 1 1/4" 1' 11 3/4"	2' 1 1/2" 1' 11 3/4"	2' 3/4" 1' 11 1/2"	2' 3/4" 1' 11 1/4"	2' 1 1/4" 1' 10 3/4"	2' 1 3/4" 1' 10 1/2"

Depth-of-field table of MC Rokkor 58mm F1.2 Lens (in meters)

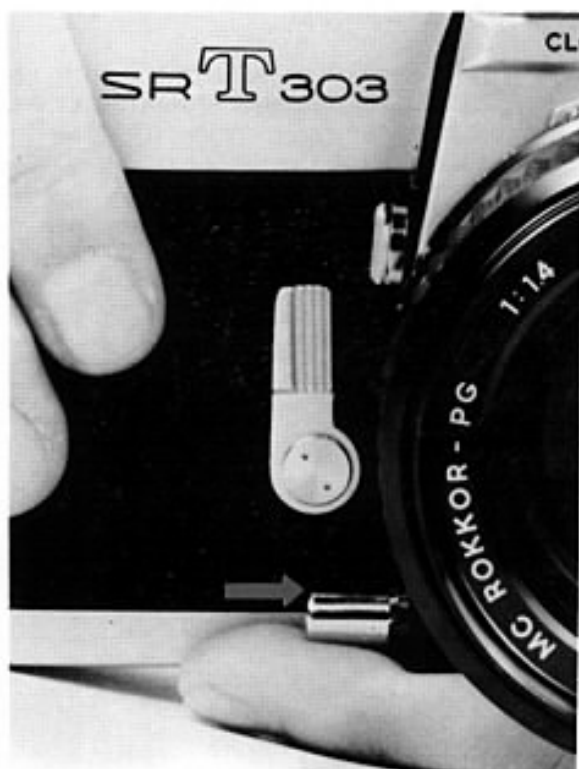
Dist. (m) \ F No.	1.2	2	2.8	4	5.6	8	11	16
∞	∞ 86.0	∞ 53.8	∞ 38.0	∞ 26.9	∞ 19.1	∞ 13.5	∞ 9.6	∞ 6.8
10	11.3 9.0	12.2 8.5	13.5 8.0	15.8 7.3	20.8 6.6	37.7 5.8	∞ 4.9	∞ 4.1
5	5.3 4.7	5.5 4.6	5.7 4.4	6.1 4.2	6.7 4.0	7.8 3.7	10.2 3.3	18.1 2.9
3	3.10 2.90	3.17 2.85	3.24 2.79	3.36 2.71	3.53 2.61	3.81 2.48	4.29 2.31	5.22 2.11
2	2.04 1.96	2.07 1.93	2.10 1.91	2.15 1.87	2.22 1.82	2.32 1.76	2.48 1.68	2.79 1.57
1.5	1.52 1.48	1.54 1.46	1.56 1.45	1.58 1.43	1.61 1.40	1.67 1.37	1.75 1.32	1.88 1.25
1.2	1.22 1.19	1.22 1.18	1.23 1.17	1.25 1.16	1.27 1.14	1.30 1.11	1.35 1.08	1.42 1.04
1	1.01 0.99	1.02 0.99	1.02 0.98	1.03 0.97	1.05 0.96	1.07 0.94	1.10 0.92	1.14 0.89
0.9	0.91 0.89	0.91 0.89	0.92 0.88	0.93 0.88	0.94 0.87	0.95 0.85	0.98 0.84	1.01 0.81
0.8	0.81 0.79	0.81 0.79	0.81 0.79	0.82 0.78	0.83 0.77	0.84 0.76	0.86 0.75	0.89 0.73
0.7	0.71 0.70	0.71 0.70	0.71 0.69	0.71 0.69	0.72 0.68	0.73 0.67	0.74 0.66	0.76 0.65
0.6	0.60 0.60	0.61 0.60	0.61 0.59	0.61 0.59	0.61 0.59	0.62 0.58	0.63 0.57	0.64 0.56

Checking the effects of depth of field

MC Rokkor Lenses are designed with a meter coupler which permits them to remain wide open during viewing, focusing, and exposure setting. In order to check your depth of field visually when using these lenses push the diaphragm stop-down button on the camera body after the aperture has been set.

When using other Rokkor Lenses designed for the Minolta SR-1, SR-3 or SR-7, use the preview button on the lens barrel or the camera's diaphragm button.

- When the diaphragm stop-down button is pushed, after you advance the film, the diaphragm closes down to the preset aperture and locks. When the button is pressed again, the diaphragm reopens fully.



Mirror lock-up control

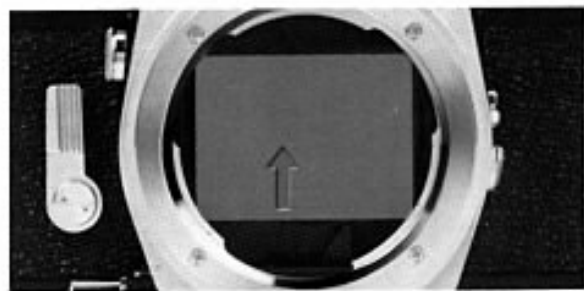
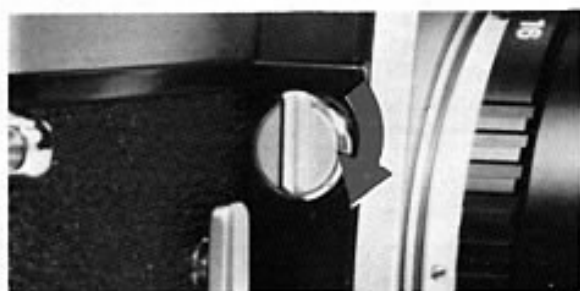
The mirror lock-up control is used in conjunction with the Rokkor 21mm F4 or F4.5 ultra wideangle lenses. When activated, the mirror is locked in an "up" position to prevent it from coming into contact with the rear element of the lens which projects into the interior of the camera.

To operate, turn the mirror lock button downward (clockwise) until it stops. The distance of movement is approximately 135° .

The mirror will return to its usual operation when the lock button is returned to the red mark.

The mirror lock button operates independently of the shutter release and film advance and can, therefore, be activated at any time.

- When the mirror is locked in an "up" position, the exposure meter of the camera cannot operate.



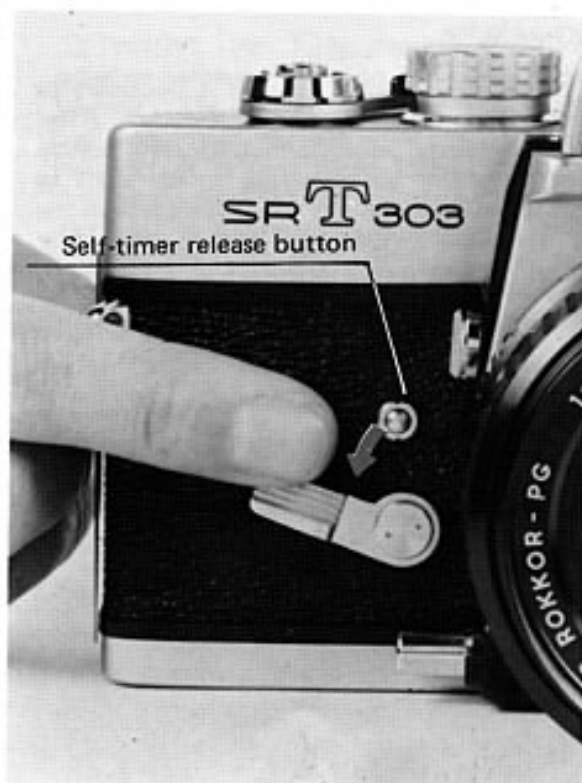
Self-timer

The self-timer delays shutter release about 10 seconds from the time you press the self-timer release button. This allows time for you to get into the picture.

To operate, advance the film (this will automatically cock the shutter). Next, push the self-timer lever down (about 90°) and then press the self-timer release button. The self-timer is now operating, and the shutter will automatically be released after about 10 seconds.

NOTE:

- If the film has not been advanced, the self-timer lever will stop after returning about 45° and the shutter will not be released.
- You can override the self-timer mechanism by pushing the shutter release button either before or after the self-timer has been activated.



Infrared index

When using infrared film it is necessary to make an "infrared focus adjustment." After you have made your normal focusing adjustment, turn the focusing ring to the right to align the distance on the focusing scale with the red "R" mark on the depth-of-field scale. After this adjustment has been made you are ready to shoot.

- To determine correct exposure for infrared photography, consult the instructions enclosed in the film package.



Film plane index

The $\oplus$ symbol engraved to the left of the film advance lever shows the exact position of the film in the camera. It is used to precisely measure the distance from subject to film for close-up photography and photomacrography.



MULTIPLE EXPOSURES

To intentionally make more than one exposure on a single frame of film:

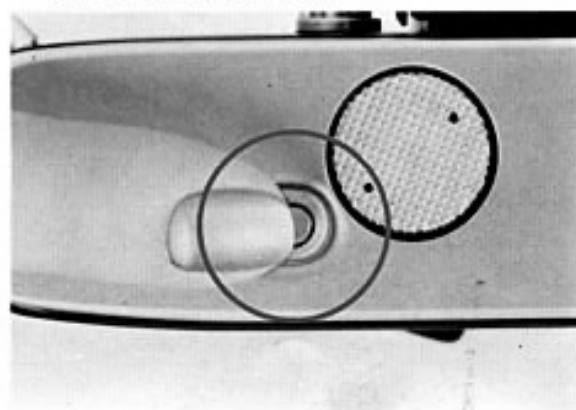
1. Make the first exposure in the usual way.
2. Push the film-advance release button on the bottom of camera. (Do not continue depressing the button while film is being advanced.)
3. Operate the film-advance lever. This will cock shutter for the next exposure, but the film will not advance since the release button has been pushed.
4. Make your second exposure.
5. Then repeat steps 2 and 3 above as many times as desired to make further exposures.
6. After the last multiple exposure, advance film to the next frame in the usual way without pushing the advance-release button.

NOTE:

Exposure counter will advance as usual each time the film-advance lever is operated.

UNLOADING EXPOSED FILM

1. To rewind the film, depress the film-advance release button on the base of the camera. The button should remain depressed when you remove your finger. (If, however, it returns to its locked position, rewind the film for approximately 2 revolutions while depressing the button. Then actuate the film advance lever one full stroke without depressing the button and depress it again. This should lock button in the depressed position.)



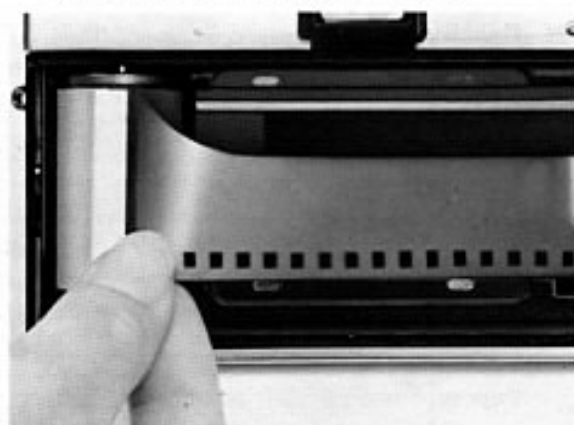
2. Lift the rewind crank and turn it clockwise. This will rewind the film into the magazine. When you feel a slight resistance, you have rewound nearly all the film and it has disengaged from the take-up spool. After one or two more turns you can assume all the film has been rewound into the magazine.



3. Now, pull the back cover release knob out to open the camera back and remove the film cartridge.

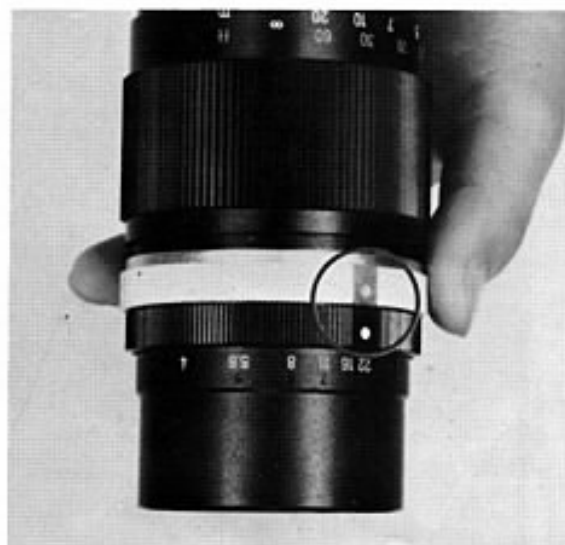
NOTE:

- The film-advance release button will automatically return to its original position as the film advance lever is activated.



Manual preset Rokkor Lenses

- 1) Set the shutter speed.
- 2) Set the maxim aperture of the lens, then close down until the two needles are aligned.
- 3) Release the shutter.



- It is not necessary to use the diaphragm stop-down button, with manual preset lenses.
- Compose and focus your picture before making your exposure setting.
- If you focus or compose your picture after making your exposure setting, and you do this by opening the lens to maximum aperture, be sure to close it down again to the proper point before you shoot.

NOTE:

- The indicator needle moves when the aperture is adjusted.
- The follower needle moves when the shutter speed is adjusted.

USING INTERCHANGEABLE ROKKOR LENSES OTHER THAN MC LENSES

When using Rokkor Lenses designed for the Minolta SR-1, SR-3 or SR-7, which do not have a meter coupling pin, you must use the "stop-down measurement system" to set exposure.

With this system the indicator needle moves when the lens diaphragm is opened or closed and the follower (circle-tipped) needle is activated by the shutter-speed dial.

Auto Rokkor Lenses

- 1) Advance the film.
- 2) Press the diaphragm stop-down button (it will remain depressed).
- 3) Set the shutter speed.
- 4) Turn the diaphragm ring until the two needles are aligned. (The diaphragm can be set first.)
- 5) Press the diaphragm stop-down button again.
- 6) Focus and shoot.

- The diaphragm stop-down button will not operate if the film advance lever has not been advanced completely.
- When the diaphragm stop-down button is pressed the second time, the diaphragm reopens to maximum aperture.
- When the shutter is released, the diaphragm automatically closes down to the preset aperture and reopens.



CHANGING LENSES

Lenses can be changed even when the film has been advanced and the shutter cocked. To remove the mounted lens, push the lens release button down and rotate the lens counterclockwise until it stops. It can now be lifted out.



To mount a lens, insert it into the bayonet socket by lining up the red dot on the lens barrel with the red dot on the camera body. Now, turn the lens clockwise until it spots with a "click."



CARE AND STORAGE OF YOUR MINOLTA SR-T 303

Do not touch the lens. If it becomes dirty, use a rubber ball blower to blow dust off its surface, then gently wipe its surface from the center outward with a lens cleaning cloth or tissue.

- Try to keep the lens clean. Brush it with a soft brush from time to time.
- Do not touch the mirror, but dust it with a soft brush.
- External camera surfaces may be cleaned with a silicon cloth.
- When storing the camera, set the distance scale to ∞ , release the shutter, and put the camera in its leather case.
- Do not drop or jar the camera.
- Do not store the camera in high temperature or humidity.
- When leaving the camera unused for a long time, remove the mercury battery from it.
- When storing the camera for a long period of time, put in original packaging with a small bag of drying agent, such as silica gel.

CAUTION:

- *Lens cleaning fluid should be used only when fingerprints or scum formation cannot be removed with lens tissue. In this case, use one drop only of lens cleaner on lens cleaning paper or a soft cloth and wipe the lens gently from its center toward the edge. Be sure not to drop the fluid directly on the lens.*

We hope that you'll enjoy your Minolta camera.

If you have any questions, ask your Minolta dealer. He is knowledgeable in all aspects of photography, and he can help you with all of your photographic needs.

Minolta Camera Co., Ltd., 30, 2-Chome,
Azuchi-Machi, Higashi-Ku, Osaka 541, Japan
Minolta Corporation, 200 Park Avenue South
New York, N.Y. 10003, U.S.A.

Minolta Camera Handelsgesellschaft m.b.H., 2
Hamburg 1, Spaldingstrasse 1, West Germany
Minolta Hong Kong Limited, D'Aguilar Place,
D'Aguilar Street, Hong Kong

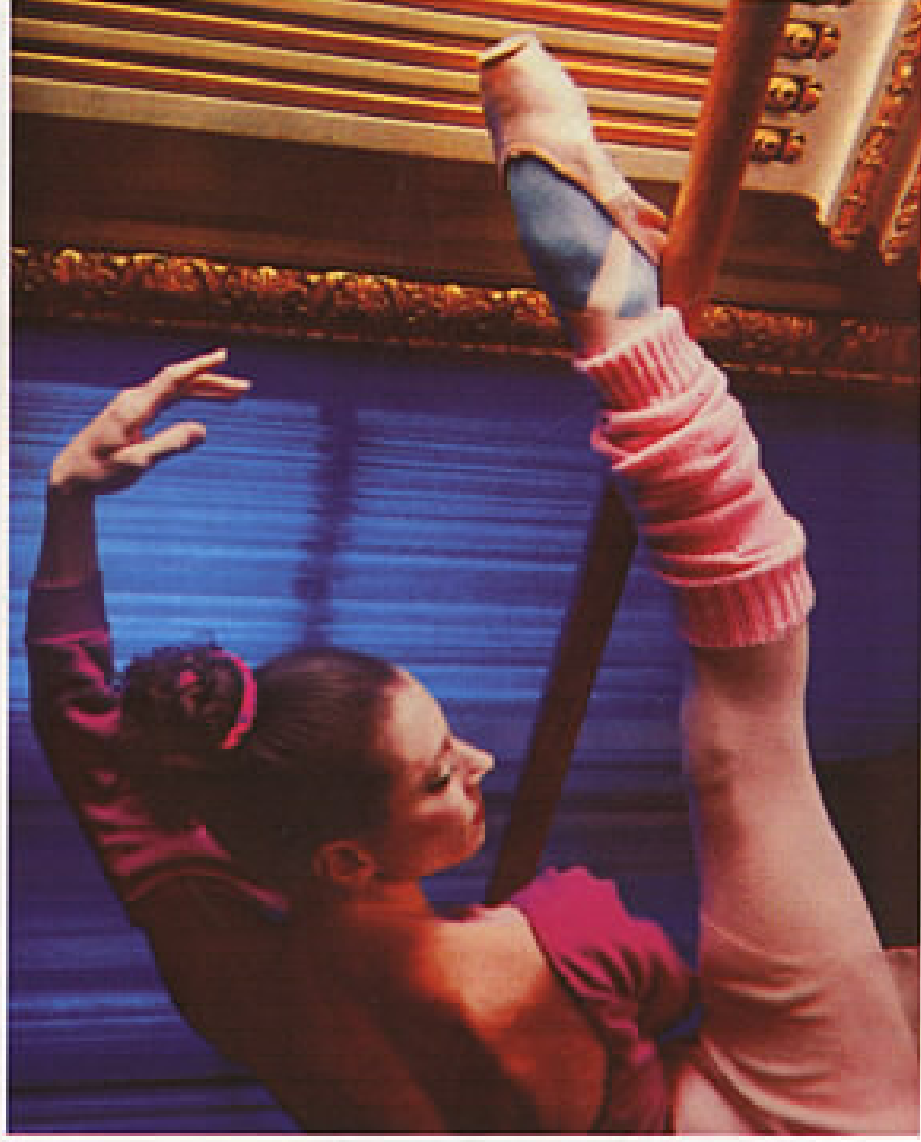
CAUTION:

- Touch nothing inside the bayonet mount while lens is removed.
- If the lens is left removed, replace it with a body cap to prevent dust from collecting on the mirror and shutter mechanisms.



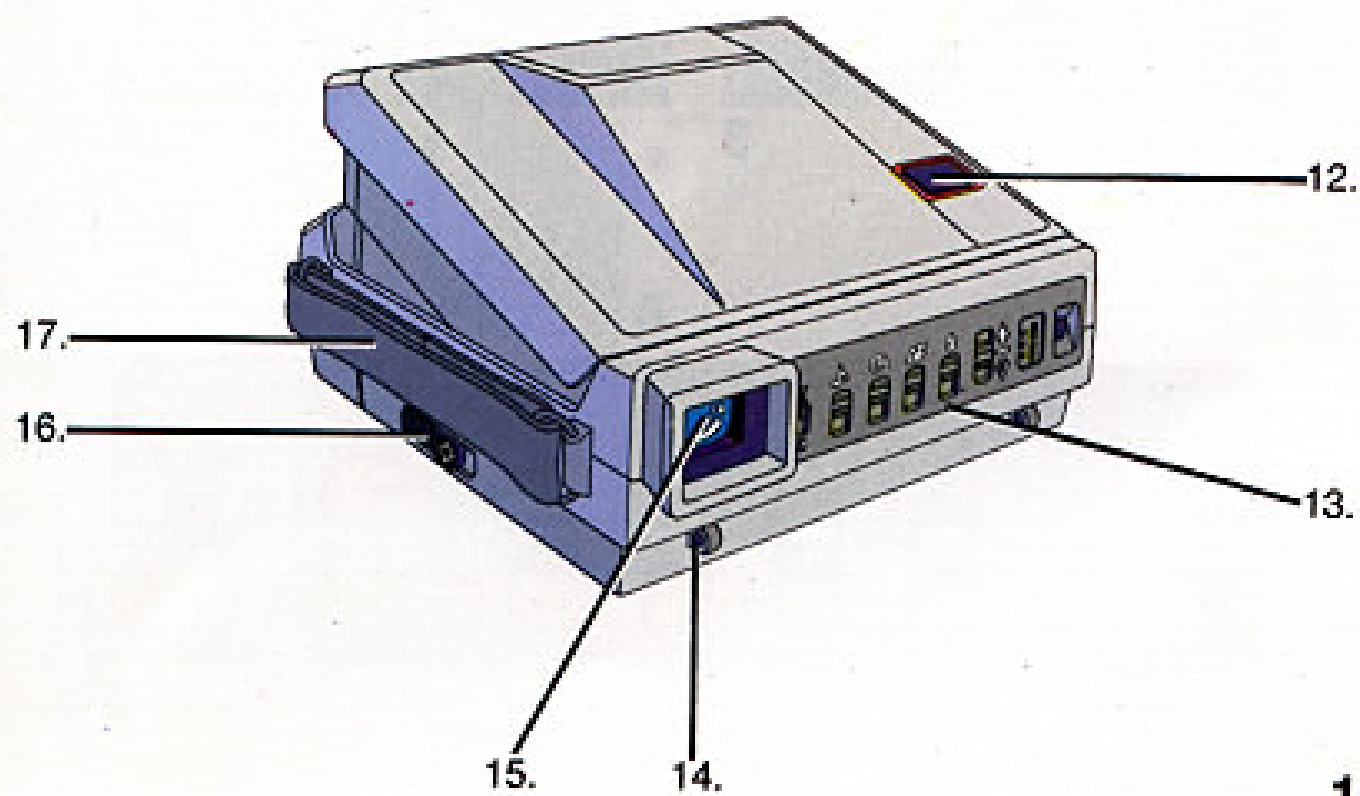
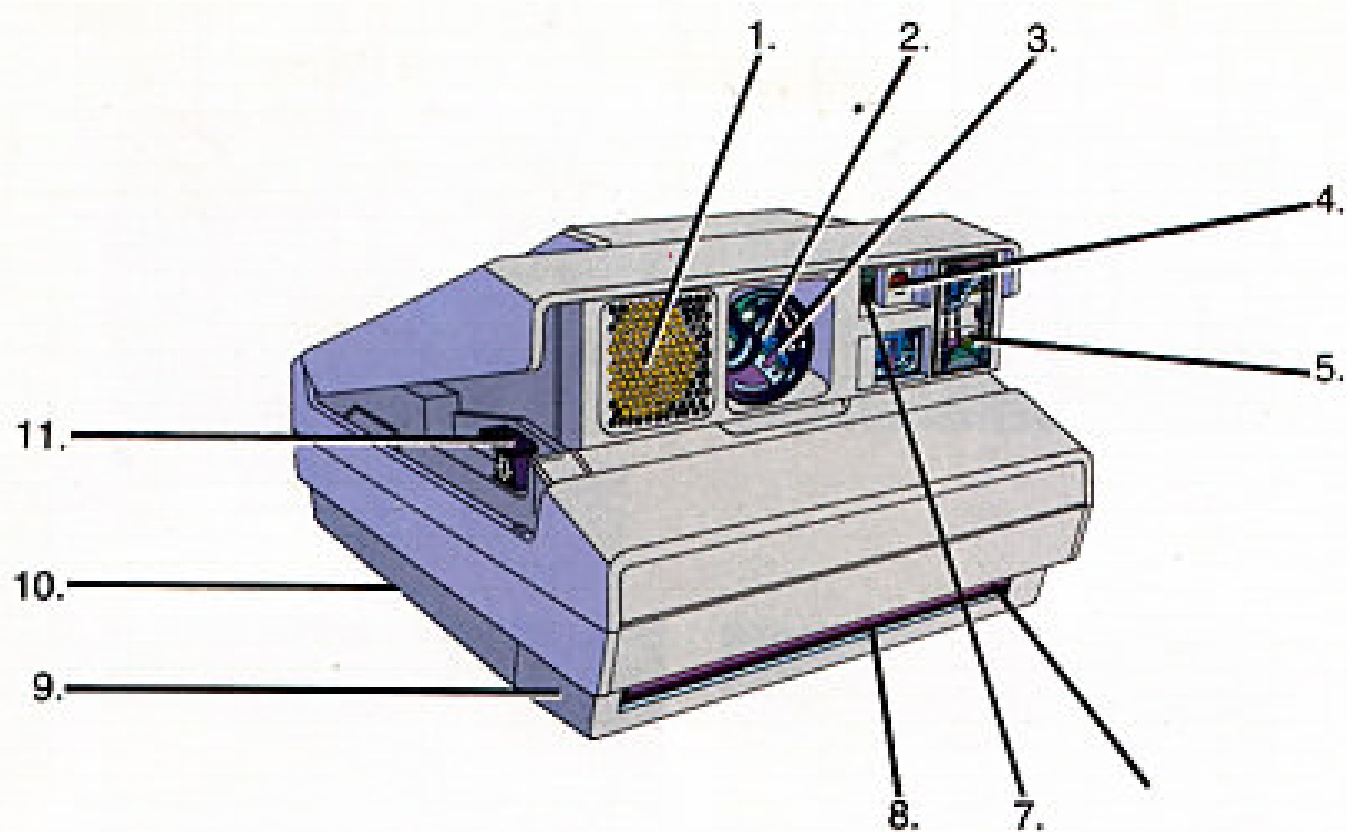
Polaroid

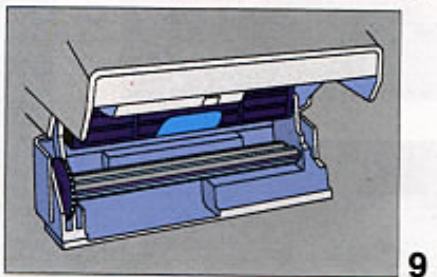
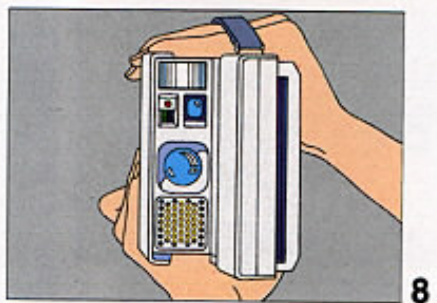
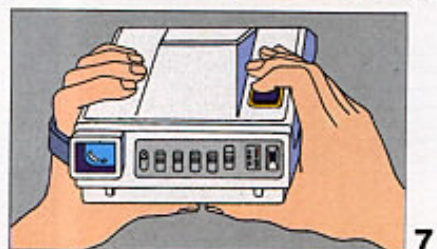
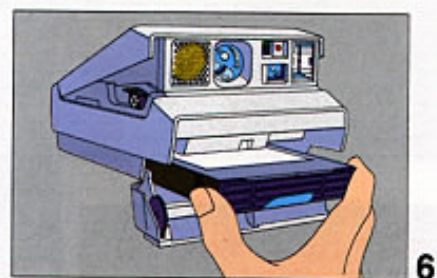
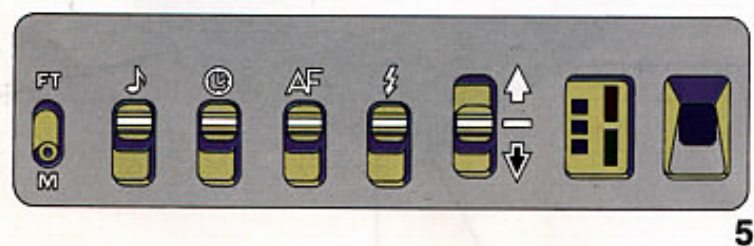
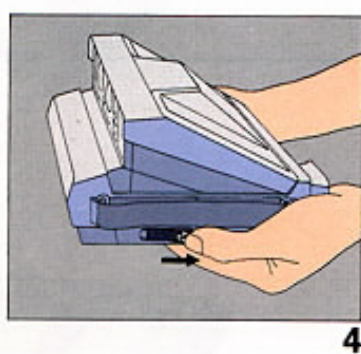
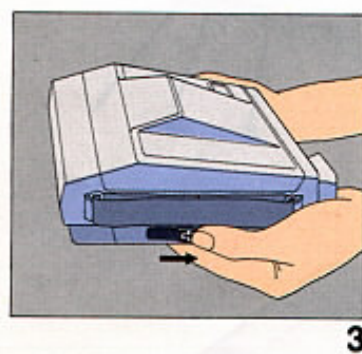
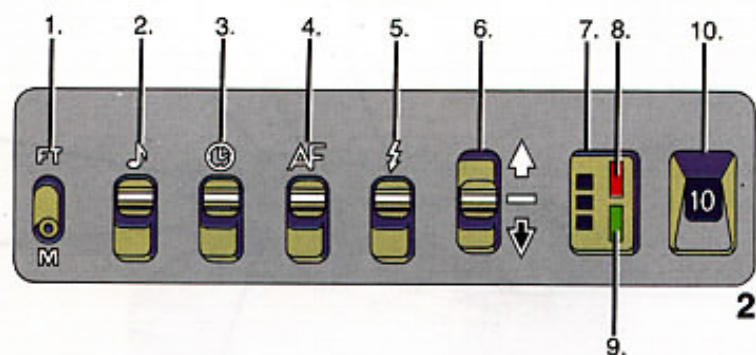
Image System



Deane Marshall

Boston





Throughout the text you will find a series of numbers. Each of these refers to a picture on the fold-out pages.

The film

Use **only** Polaroid Image System color film. Each film pack provides 10 color pictures and contains a battery that powers both the camera and the electronic flash.

Check the film expiration date on every film box to be sure the film is fresh.

The camera (picture 1)

1. Sonar disk (sends out sound waves to measure distance to subject)
2. Three-element, 125mm lens
3. Automatic shutter system — speed/aperture variable (speeds range from 1/245 of a second to 2.8 seconds; apertures from f/10 to f/45)
4. Red light (indicates self-timer switch is on)
5. Electronic flash (from 1/3000 to 1/20,000 of a second)
6. Film shade (protects picture from light as it exits the camera)
7. Photocell (silicon photo-diode; measures light from the scene and from the flash)
8. Film exit slot
9. Film door
10. Tripod socket (on the bottom of the camera)
11. Film door release button
12. Shutter button
13. Control panel
14. Neckstrap connector
15. Viewfinder
16. Release latch (to open and close the camera)
17. Adjustable hand strap

The control panel (picture 2)

1. Meters or feet switch (slide it up to change the distance display in the viewfinder to feet)
2. Audible signal switch (slide it down to turn off all sound signals)
3. Self-timer switch (slide it down to turn self-timer on)
4. Autofocus switch (slide it down to turn off autofocus when photographing through glass)
5. Flash switch (slide it down to turn off the electronic flash)
6. Lighten/darken control
7. Remote control socket
8. Red light (indicates flash is charging)
9. Green light (indicates flash is ready)
10. Picture counter (counts down to indicate remaining pictures)

Basic operating instructions

Opening and closing the camera

To open the camera: Place both hands as shown (picture 3). Slide the release latch **back**. The camera will open automatically.

To close the camera: Hold the camera as shown (picture 4). Slide the release latch **back**. Push the cover down until both sides lock.

When you have finished using the camera, close it to protect the lens.

Check the control panel

Before you load the film, be sure all the switches are aligned as shown (picture 5). This way, the camera will be fully automatic.

Load the film

Use only Polaroid Image System color film.

Push the film door release button **down**. The film door will open.

Hold the film pack by its edges only (picture 6) and slide it all the way into the camera.

As soon as you close the film door, **the battery in the film pack will power the camera** and you will see

- the film cover eject
- the picture counter set to "10"
- a green light that shows the flash is ready to fire.

To remove an empty film pack: After you have taken the 10th picture, you will hear 3 chimes to remind you to remove the empty film pack.

To remove the pack, push the film door release button **down**. Pull the film pack out by the colored tab.

When the camera contains an empty film pack

- you will hear **three chimes** when you open the camera
- you will hear **three chimes** and see a **flashing zero** in the viewfinder when you press the shutter button halfway and hold it.

Position your subject

Indoors, your subject should be within the **60cm to 4,6m** (2 to 15 ft.) flash range and, for best results, near a light-colored background.

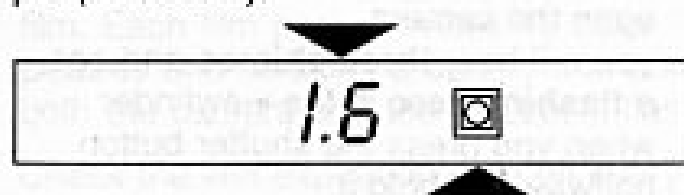
Outdoors, your subject should be at **least 60cm** (2 ft.) away.

Take the picture

Slide your left hand through the hand strap and hold the camera as shown (picture 7) for horizontal pictures. For vertical pictures, see picture 8.

Frame your subject in the viewfinder and press the shutter button **halfway**. You should see:

The distance to your subject, for example (in meters):



A green "good picture" symbol.

To take the picture, press the shutter button the rest of the way.

When you release the button, the camera will eject the picture and the flash will immediately recharge.

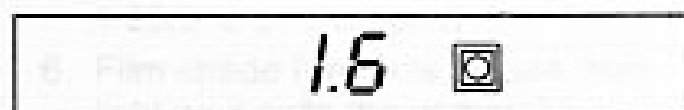
Note: If, after having pressed the shutter button halfway, you wish to reposition your subject or yourself, **release the button**. Make the changes and press the shutter button halfway again.

The Image System camera

The viewfinder displays

When you press the shutter button halfway, displays indicating distance (in meters or feet) and symbols for "good picture" or "caution" appear in the viewfinder.

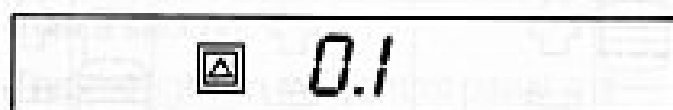
When you see the green "good picture" symbol:



Press the shutter button the rest of the way to take the picture.

When you hear a beep and see the flashing yellow "caution" symbol, your subject is either too close, too distant, or the flash is turned off. For example: The display shows the "caution" symbol and

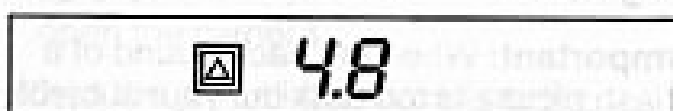
the distance 0.1 (in meters)



Your subject is too close. Release the shutter button and stand at least 60cm (2 ft.) from your subject.

or

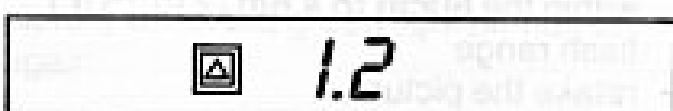
a distance from 4.8 to 6.2*



Your subject is beyond the flash range. Release the shutter button and position your subject within the 60cm to 4.6m (2-15 ft.) flash range.

or

a distance from 0.6 to 4.6



Your subject is within range, but the flash is off. Slide the flash switch up to turn the flash back on.

*When your subject is beyond 6.2m (20 ft.), the distance display will be blank.

Automatic focusing

When you press the shutter button, sound waves (at frequencies beyond our range of hearing) are sent to the **central part** of the scene. A built-in computer measures the time it takes the soundwaves to reach the scene and the echo to return and uses this measurement to provide the correct lens setting.

- **Be sure the sound waves have a clear path to your subject.** If an object near the central part of the scene prevents the sound waves from reaching your subject, the lens will focus on that object, causing your subject to be unsharp.
- When photographing more than one person, focus and illumination are improved if **everyone is about the same distance from the camera.**

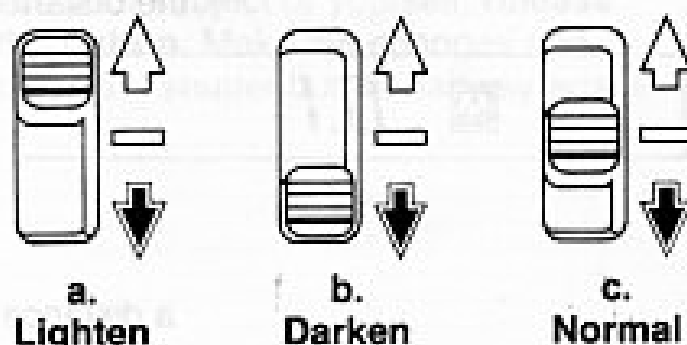
The lighten/darken control

Use this control **only** when you want to **retake** a picture to make it lighter or darker.

To make the picture lighter: Slide the control **all the way up (a).**

To make the picture darker: Slide the control **all the way down (b).**

As soon as you have finished retaking the picture, return the control to the **center position (c).**



Important: When the background of a flash picture is too dark but your subject is well illuminated

- be sure the lighten/darken control is in the **center position**
- place your subject **near a light-colored background**, keeping both within the **60cm to 4.6m (2 to 15 ft.)** flash range
- retake the picture.

The electronic flash

The quick-recharge system: When your subject is close, less energy is needed for the flash than when your subject is farther away. In conventional flash systems, unused energy is wasted. Polaroid's new thyristor flash allows this energy to be saved, resulting in faster recharge times – usually less than a second.

The red light on the control panel will come on and the flash will automatically begin to charge every time you

- load film into the camera, or
- press the shutter button halfway, or
- take a picture, or
- open the camera.

When the green light comes on, the flash is ready to fire. The light will stay on for 20 to 30 seconds.

If you wish to take a picture and the green light has gone off, press the shutter button **halfway**. You can take the picture when the green light comes on again.

The electronic flash is designed to be used for every picture – indoors and outdoors

Every time you take a picture, your camera's built-in electronic flash blends light from the scene with just enough flash to give you the best possible picture.

In the shade, the flash will automatically supply the additional light needed to produce a pleasing photograph.

In bright sunlight, your camera will blend the sunlight with just the right amount of flash to soften shadows and reveal the facial details you expect to see in the picture.

The self-timer

Place the camera on a tripod or other steady support. Frame your picture in the viewfinder and press the shutter button halfway to be sure you get the green "good picture" symbol in the viewfinder.

Release the shutter button.

Slide the self-timer switch **down (a)**. You now have **12 seconds** to get into your picture.

During the first **10 seconds**, the camera will beep and you will see a flashing red light on the front of the camera.

2 seconds before the camera takes the picture, the red light will stay on and the beeps will become a steady signal.

After the camera has taken the picture, it will not eject the film until you slide the self-timer switch **up (b)**. To avoid a double exposure, **do not close the camera before you slide the switch up**. Whenever you want to stop the 12-second countdown, slide the switch **up** and the timer will turn off.



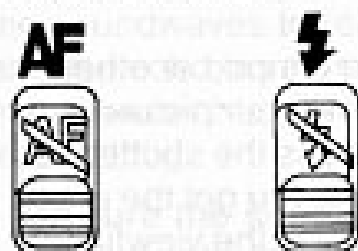
a.



b.

To photograph a distant scene through glass

To avoid focusing on the glass and getting a flash reflection, turn off the autofocus and flash systems by sliding **both switches down**, as shown.



When you turn off the autofocus system the lens sets for distant scenes and the picture has to be taken a special way.

- Be sure the scene is **at least 4.6m (15 ft.)** from the camera and **in daylight**.
- Frame the picture in the viewfinder and press the shutter button halfway (you will not see a distance display because the autofocus system is off).
- When you see the green "good picture" symbol, take the picture.
- If you hear a beep and see the flashing yellow "caution" symbol, there is not enough light to take a good picture.

Important: When you have finished taking the picture, slide both the autofocus and flash switches **up** to turn the system back on.

Trouble-free picture taking

Be sure the soundwaves have a clear path to your subject

If an object in the foreground prevents the soundwaves from reaching your subject, the lens will focus on the foreground object, causing your subject to be out of focus.

Center your subject in the picture

When the subject is not centered, the soundwaves will pass by it and measure the distance to the background. The lens will then focus on the background, causing the subject to be unsharp.

If you wish to keep your subject off center, frame it in the middle of the viewfinder and press and **hold** the shutter button **halfway** to get the correct lens setting. Without releasing the shutter button, reframe your subject off center and press the button the rest of the way to take the picture.

Avoid subject movement after the shutter button is pressed halfway

If you wish to reposition your subject or yourself after pressing the shutter button halfway, **release the shutter button**. Make the changes, recheck the viewfinder display and take the picture.

Hold the camera steady

In low light, with a subject beyond the flash range, hold the camera steady or place it on a firm support.

Avoid bright backgrounds, or light sources in the central part of the scene

Bright window light or central light sources can cause the camera's photo-cell to underexpose the subject.

Temperature

Extreme temperatures may cause prints to have incorrect colors.

When the temperature is below 13°C (55°F), keep camera and film warm.

Avoid storing camera or film in hot places. Keep developing pictures away from hot surfaces.

Developer rollers

The developer rollers inside the film door (picture 9) must be kept clean to avoid repeated spots or bar patterns on pictures. Clean rollers with a damp, lint-free cloth.

Lens

To remove fingerprints, breathe on the lens and wipe gently with a clean, soft facial tissue. Do not use silicone-treated eyeglass tissue.

Copies and enlargements

Beautiful copies and enlargements can be made from your favorite pictures.

For copy service information, contact your dealer or the nearest Polaroid office.

Warranty

If this camera proves defective within **3 years** of the original purchase date, we will repair it or, at our option, replace it free of charge with a camera of the same or equivalent model. We will make no charges for labor, service or parts.

This warranty does not cover damage caused by accident, misuse or tampering with the camera. Repairs to correct such damage will be made at a reasonable charge.

To take advantage of this warranty, the camera must be returned to, and repaired by, one of the Polaroid Service Centers.

The above warranty and provisions do not affect your statutory rights.

For information and help

If you are unable to get good pictures, review this instruction book.

Picture problems are often due to incorrect use of the camera. If you need further help, and before you return your camera for repair, please see your dealer or contact the nearest Polaroid office.

If you write, please explain the nature of the problem and, if possible, enclose sample pictures. Include your return address.



WITH YOUR



EIGHT - TWENTY

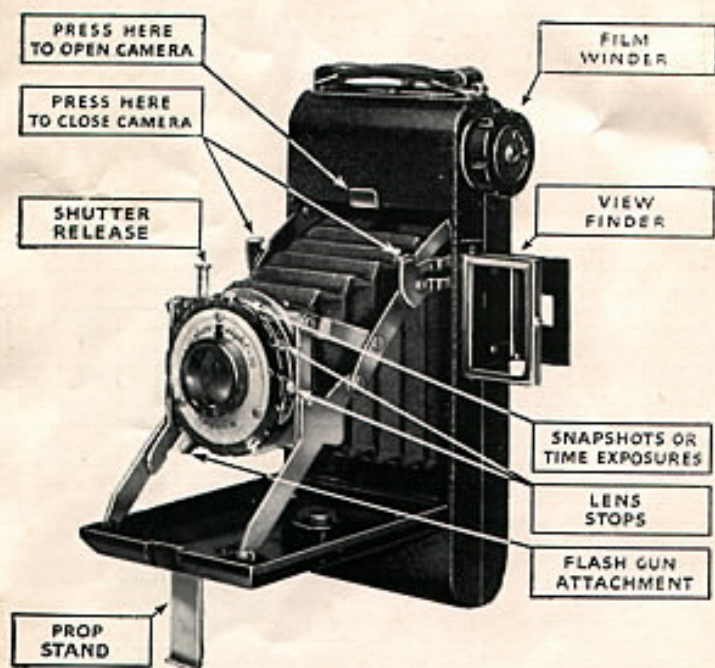
KING PENGUIN

KERSHAW-SOHO (SALES) LIMITED
MORTIMER HOUSE, MORTIMER ST.
LONDON W.1.

FIRST, KNOW YOUR CAMERA

Study the Instructions

Before attempting to take pictures, get to know your KING PENGUIN thoroughly, by practising the few very simple moves needed to open and close the camera and operate the shutter. The picture below shews all the features of your KING PENGUIN. The operation of it is clearly explained in this folder.



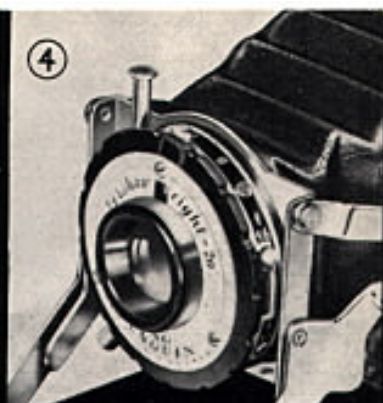
LOADING WITH FILM

1.—Hold the camera as shewn; press the top centre stud sideways to release the back cover; remove the cover.

2. & 3.—Swing out the spool holder as shewn; pull the film winder out and insert an empty spool; then release the winder. Place a new spool of 120 film in the spool holder, with the tapered end of the red backing paper pointing toward the empty spool. Swing the spool-holder back into the camera. Keep the film wrapper and carton for further use.

CAUTION.—Do not attempt to use 620 film in this camera, as the spool is of a different size.

Slit the gummed seal which holds the red backing paper, and pull out about 3 inches of the red paper—just enough to allow the pointed end to be inserted into the wide slot of the empty spool. Make sure that the red side of the paper is toward you (i.e. you must not see the black side), and that the paper is exactly centred between the two flanges of the spool so that it will rewind evenly. Turn the film winder two or three times. Replace the back cover on the camera, making sure that the hinge at the bottom is properly engaged. Look into the small window at the back of the camera and wind the film until the figure 1 appears. The film is now ready for the first picture.



TO OPEN THE CAMERA

See main illustration. Grasp the camera body firmly in the left hand, and press the lock release. The camera will spring open, ready for use, and the baseboard should click firmly into position. It is advisable to make certain that the baseboard is in the correct position by giving it a slight additional tug.

TAKING PICTURES

4.—Your lens has two aperture settings, f.11 and f.16, controlled by a sliding lever. The use of these two settings is explained overleaf.

The shutter also has two settings, "I" for instantaneous or snapshots, and "B" for time exposures. (See overleaf for guide.) Begin by setting the aperture and rotate the front rim of the lens anti-clockwise until the letter "I" appears in the small window on the front of the lens housing. Erect the view-finder, locate the scene in the finder, grasping the camera firmly as shown, and press the shutter release, taking care not to move the camera in doing so. **DO NOT FORGET TO WIND ON THE FILM UNTIL THE NEXT NUMBER APPEARS IN THE REAR WINDOW AFTER EACH SHOT.**

For time exposures, turn the shutter rim clockwise until the letter "B" appears in the shutter window; stand the camera upon some firm, flat surface, set the picture in the view-finder; hold the camera firm, and press the shutter release. Hold the shutter release down whilst counting the number of seconds required for the exposure. Then release it, thus closing the shutter.

VIEW-FINDER

5.—The view-finder is of the "eye-level" type. When a scene is viewed through the finder, the rear rectangle should just fill the forward one; you should not be able to see more than the *inside* of the front frame. Held as shown, landscape pictures will result. For upright pictures, the camera should be turned around until the view-finder aperture is vertical.

TO CLOSE THE CAMERA

6.—Hold the camera as shown, press downward with both index fingers upon the ears of the locking cam of the erecting mechanism, then upward with both thumbs, and close the camera.

UNLOADING

Your roll of film gives eight exposures. After taking the eight pictures, wind on until the end of the backing paper passes the red window, then give eight or ten extra turns to the winder, and remove the back cover. Pull the winder out, and remove the spool of film, taking care not to slacken the red paper, fold the end of the paper under, and seal it with the gummed seal. Replace the spool of film in its wrapping and carton for safety. Transfer the empty spool to the winder end of the camera ready for the next film.



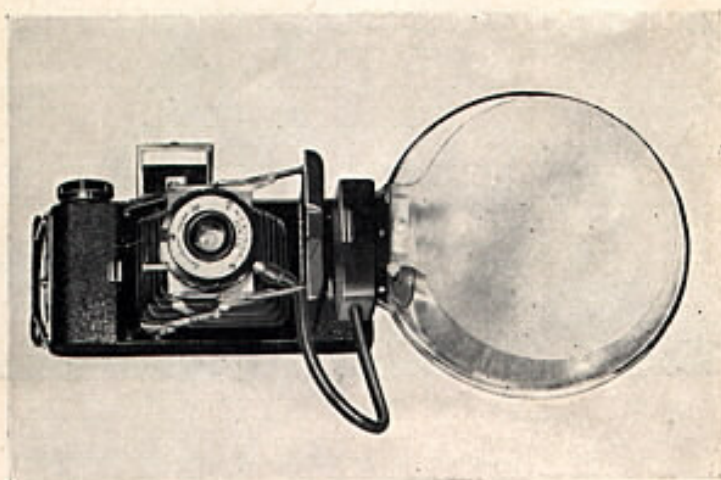
PORTRAITS

The lens of this camera is adjusted to take sharp pictures of subjects at any distance from about 10 ft. to infinity. To take close-ups it is necessary to use a Kershaw portrait attachment, which can be obtained from your dealer and which snaps into position over the lens of your camera.

Do not take photographs in poor light.

Never let the sun shine into your lens when taking pictures.





TAKING FLASH PICTURES WITH YOUR KING PENGUIN

Flashlight photographs can be made as easily as normal exposures, using a suitable flashgun, as follows:—

1. Make sure that the flashgun has the proper dry batteries correctly fitted in their container. Remove the diffuser from the reflector, and fit a flash-bulb of suitable type for the flashgun employed. Replace the diffuser.
2. Attach the flashgun to your King Penguin by screwing the clamp-screw into the tripod bush under the camera baseboard. Connect the bayonet-socket on the cable to the camera flash-gun attachment beneath the lens, keeping the cable clear of the lens. Set the shutter to "I" for snapshots, and the lens stop to f.11. Avoid reflecting surfaces (e.g. glass, polished metal, etc.) in your picture, as these may cause "flare" in your pictures. Use the view-finder and shutter release in the normal way.
3. Time exposures with flashgun should be made only when the subject is stationary, and preferably more than 10 ft. away. Set the shutter to "B". Press the shutter lever, wait for the bulb to flash, and release the shutter.

HINTS FOR BEGINNERS

DO NOT MOVE OR JERK THE CAMERA WHEN TAKING PICTURES. Do not finger the lens or pictures may be blurred. NEVER tinker with the lens. If it looks "smeared" at any time, use Lens Cleaning Tissue, obtainable from your dealer, to clean the lens, and use it carefully.

SUBJECTS

A brief guide for exposures is given below:—
 Portraits, groups, street scenes, and landscapes in average or dull light: set aperture to f.11.
 Open landscapes without heavy foreground shadows; open seascapes or beach scenes in very bright light: set aperture to f.16.





PRAKTICA

BC 1

Gebruiksaanwijzing

Operating instructions

Mode d'emploi



VEB PENTACON DRESDEN

Deutsche Demokratische Republik

Jt 540 88 III 3 1 7493 11,0 NL/E/F

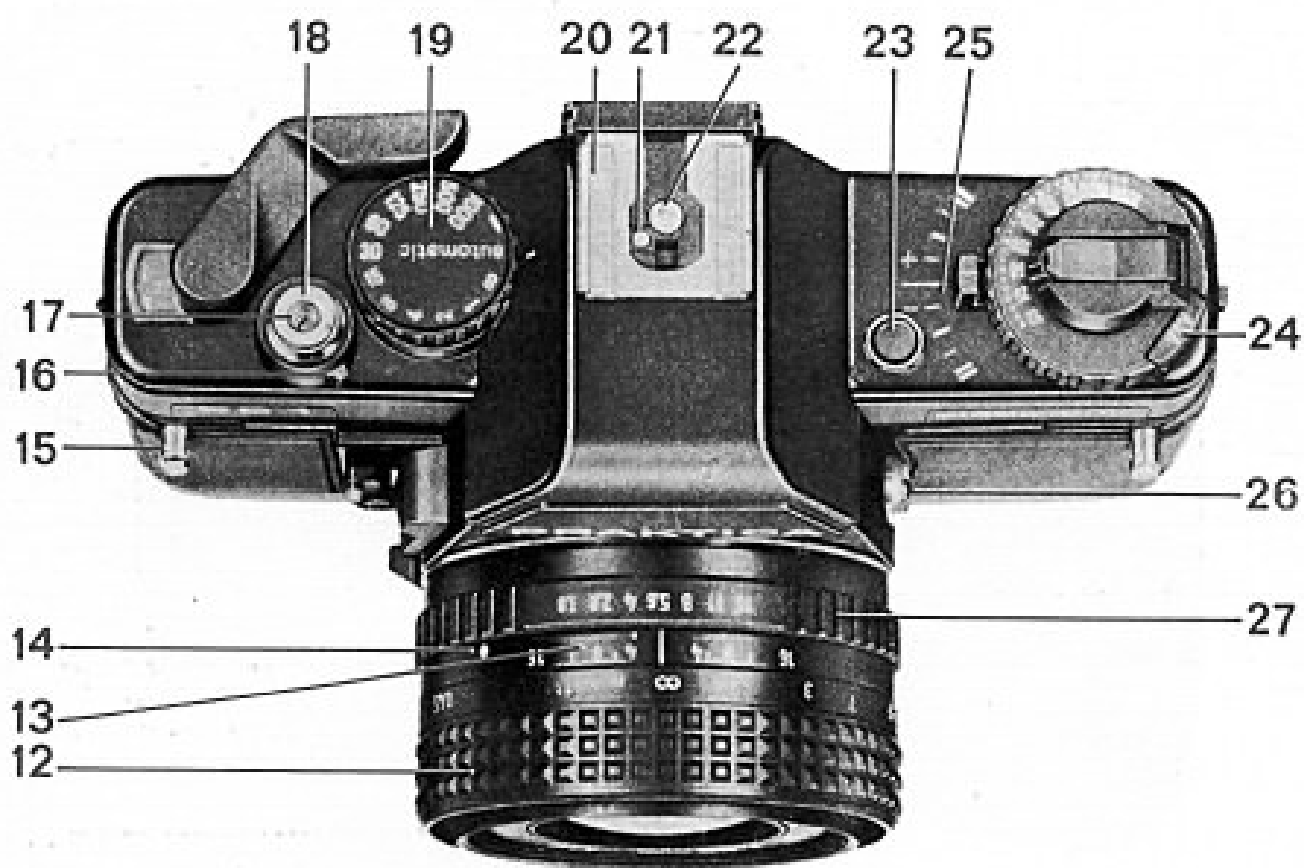
With the PRAKTICA BC 1 you have bought a quality SLR camera with fully automatic shutter speed control in a range between $\frac{1}{1000}$ s and 40 s. In addition, the camera's microelectronics make possible photography at fixed shutter speeds between $\frac{1}{1000}$ s and 1 s and unlimited shutter speeds with the B setting. The open-aperture TTL metering means a really bright viewfinder image as a result of the electronic aperture setting transfer from the lens to the camera.

17 LEDs at the right-hand edge of the viewfinder image provide information on all important shot data and operations, such as the shutter speed to be expected, underexposure and overexposure, automatic and semi-automatic operating modes as well as flash readiness with dedicated computerised flash units. In addition, the preselected aperture setting is visible at the bottom of the viewfinder image.

Manual corrections can be made for deliberate overexposures and underexposures. The PRAKTICA BC 1 is suitable for use with both normal electronic flash units and computerised flash units.

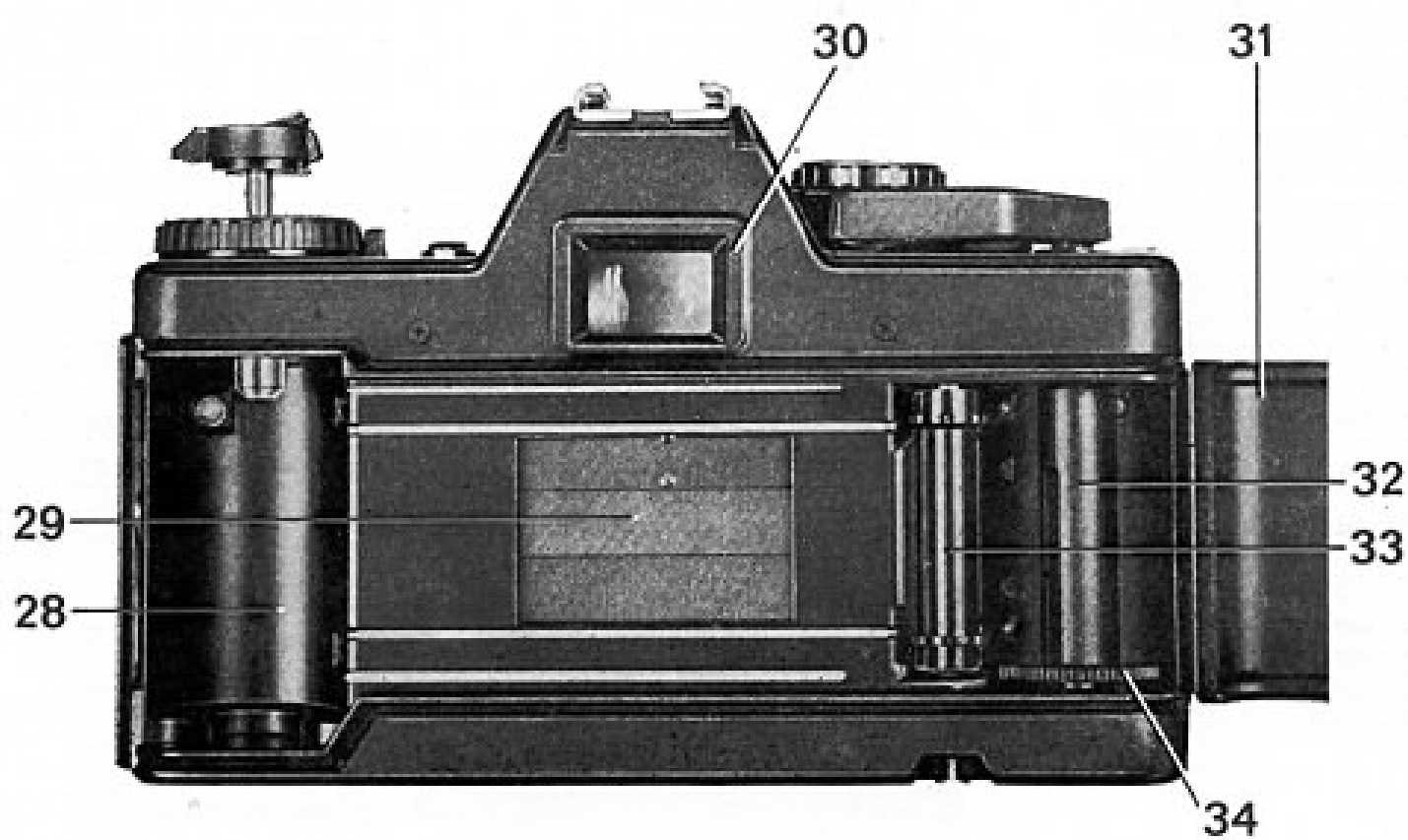
- 1 Unlocking key
- 2 Self-timer release
- 3 Self-timer cocking lever
- 4 Stop-down key
- 5 Frame counter
- 6 Cocking lever
- 7 Window for aperture reflection
- 8 Rewind crank
- 9 Rewind button
- 10 Film speed/exposure compensation dial
- 11 Filter thread

- SLR camera for 24 mm x 36 mm frame size, open-aperture TTL metering system with electronic transfer of aperture setting
- automatic stepless electronic shutter speed control between $\frac{1}{1000}$ s and 40 s
- changeover from automatic to semi-automatic mode possible — fixed speed range from $\frac{1}{1000}$ s to 1 s
- indication of shutter speed in viewfinder by LEDs
- indication of overexposure or underexposure
- aperture setting displayed at bottom of viewfinder image
- manual exposure compensation of ± 2 exposure factors
- memory hold feature
- self-timer (approx. 8 s) with starting button
- focusing system comprises Fresnel lens with diagonal triple wedge, microprism ring and ground glass ring
- flash synchronisation (approx. $\frac{1}{90}$ s) at $\frac{1}{2}$ or automatic formation of flash speed in automatic setting with dedicated computerised flash unit; indication of flash readiness in viewfinder
- viewfinder image shows approximately 95 per cent of picture sides
- PRAKTICA bayonet (flange focal length 44.4 mm, internal diameter 48.5 mm)
- connection for motor winder
- film information holder on camera back
- battery condition indication in viewfinder
- power source: 6 V primary battery
- silicon photoelement as light sensor
- metering and control range: 0–17 EV at 100 ISO/ASA (21 DIN) and aperture 1.4
- dimensions of body:
138 mm x 87 mm x 49 mm
- weight of body without battery: 530 g

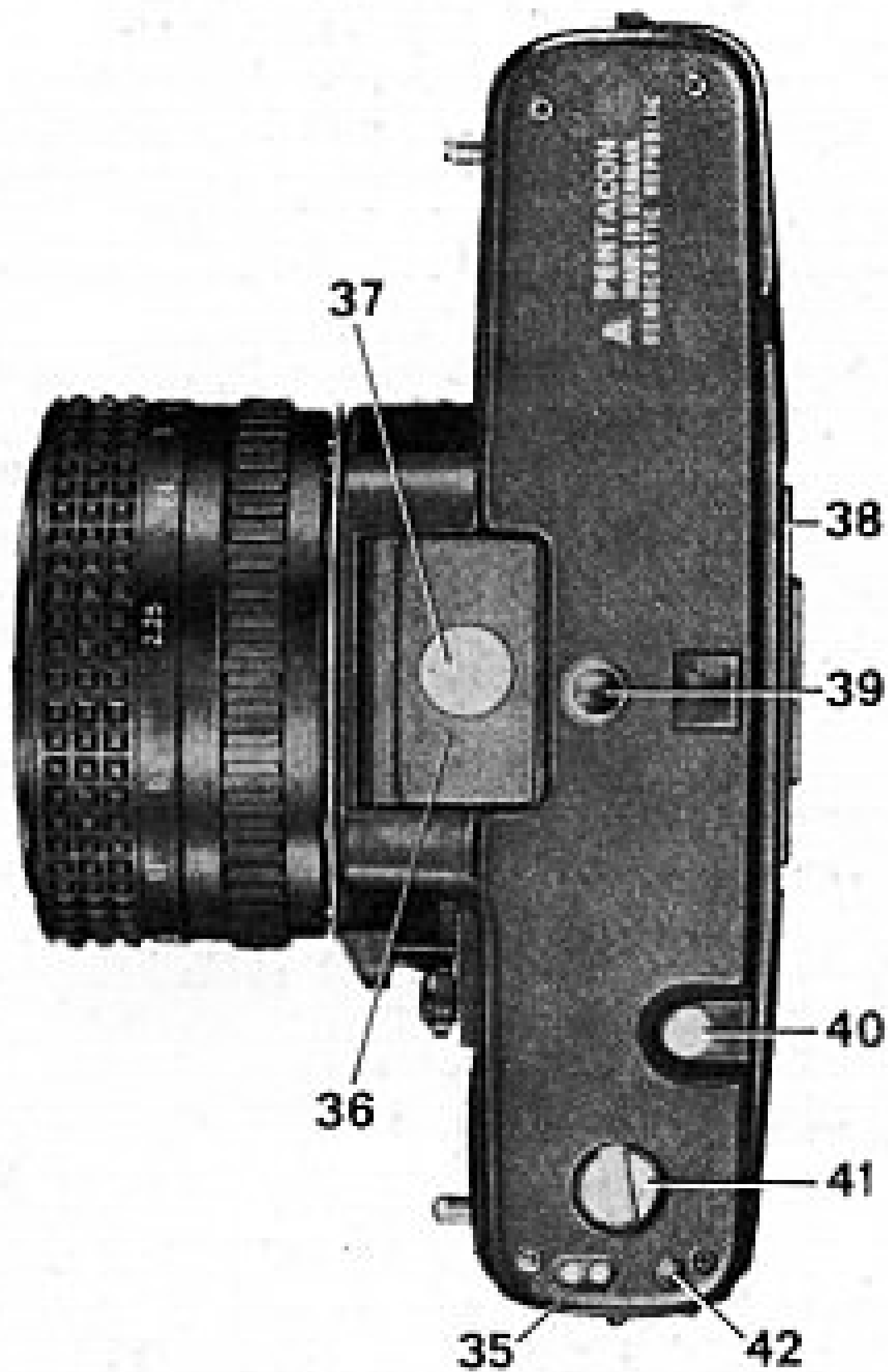




- 12 Focusing ring
- 13 Depth-of-field scale
and infrared spot
- 14 Lens positioning mark
- 15 Lug for carrying strap
- 16 Release lock with mark
- 17 Connection for cable
release
- 18 Shutter release
- 19 Mode selector
- 20 Hot shoe with centre
contact
- 21 Connection for
computerised flash
- 22 Centre contact
- 23 Memory hold and
battery check button
- 24 Unlocking key for film
speed dial
- 25 Exposure compensation
scale
- 26 Flash sync socket



- 27 Aperture setting ring
- 28 Film cartridge compartment
- 29 Shutter blades
- 30 Eyepiece with accessory holder
- 31 Camera back
- 32 Film take-up spool
- 33 Film sprocket
- 34 Knurled spool base



- 35 Contacts for motor winder
- 36 Lid of battery compartment
- 37 Locking screw of battery compartment
- 38 Film information holder
- 39 Tripod socket
- 40 Rewind release
- 41 Coupling for motor winder
- 42 Catch for motor winder
- 43 Eyepiece cover (see page 41)

This summary is no substitute for a thorough knowledge of all the operating instructions contained in this booklet.

- Insert battery

Note + and - pole markings in battery compartment cover (36).

- Open back

Pull rewind button (9) upwards and the back will open.

- Insert film

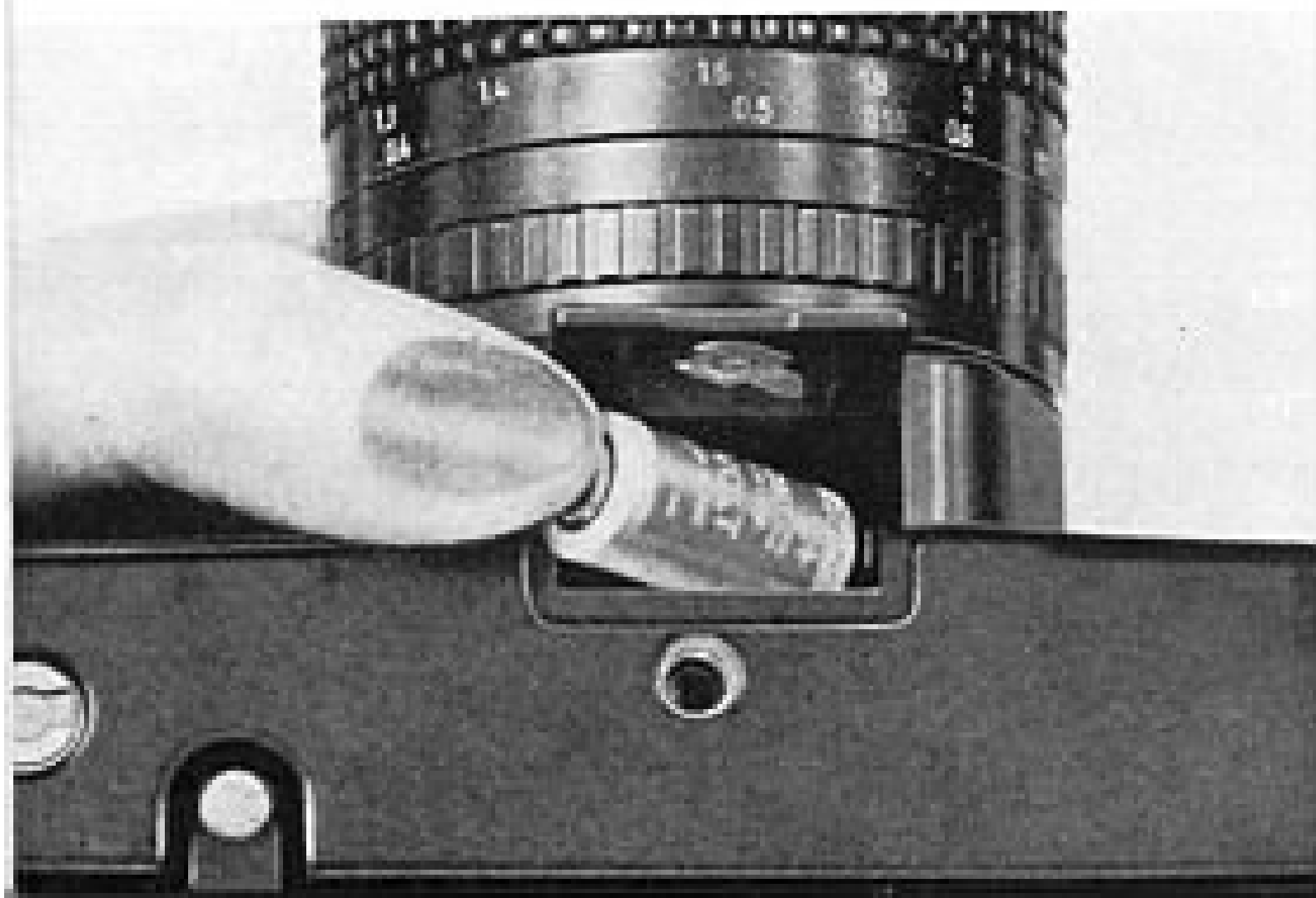
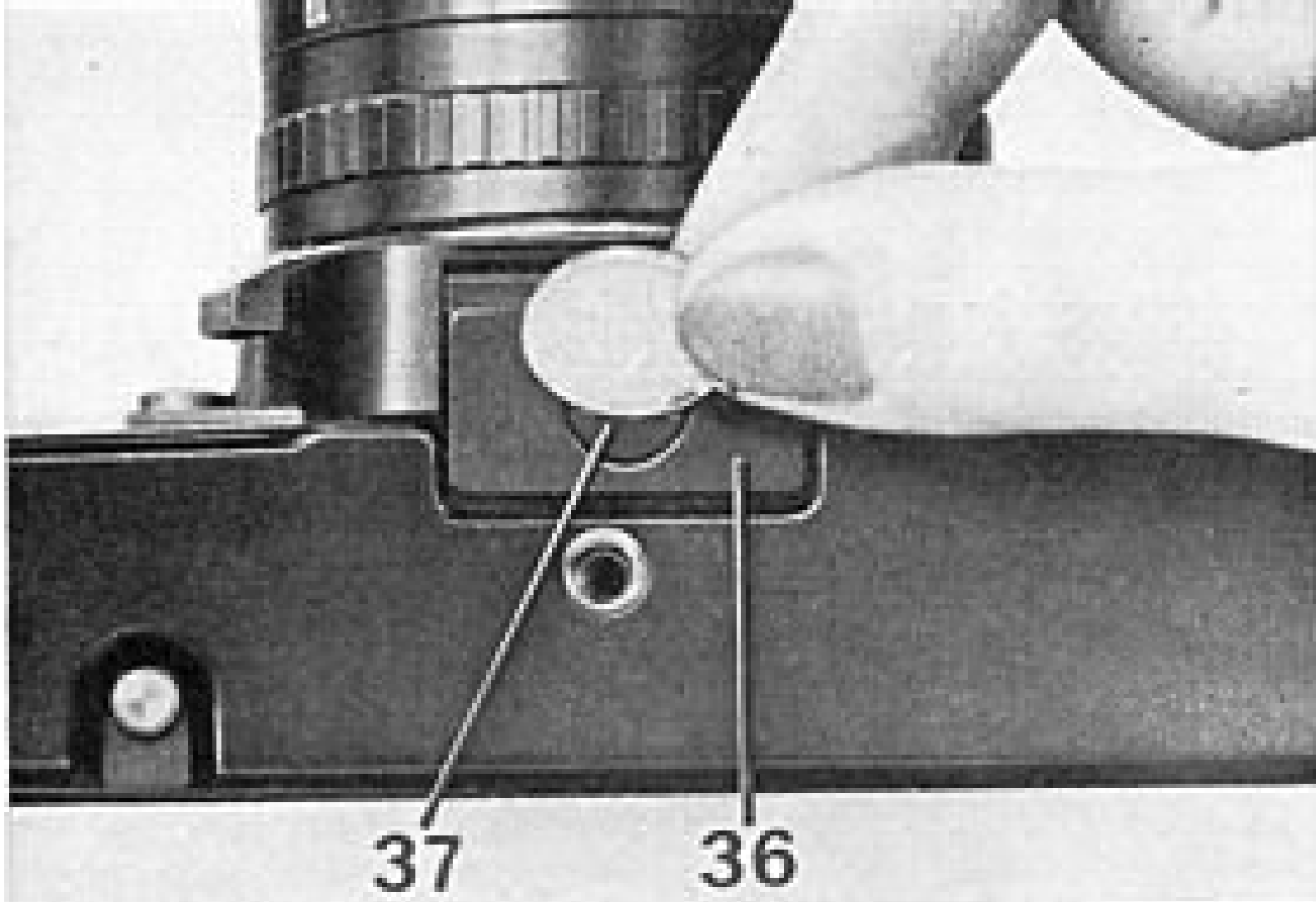
Set mode selector (19) to $\dagger$ or a fast fixed shutter speed. Insert cartridge in cartridge compartment (28), press rewind button (9) back in, insert the start of the film into the slit in take-up spool (32) and turn the spool by the knurled edge (34) towards the centre of the camera until the teeth of sprocket (33) engage in the film perforations. Swing cocking lever (6) as far as it will go to check film travel.

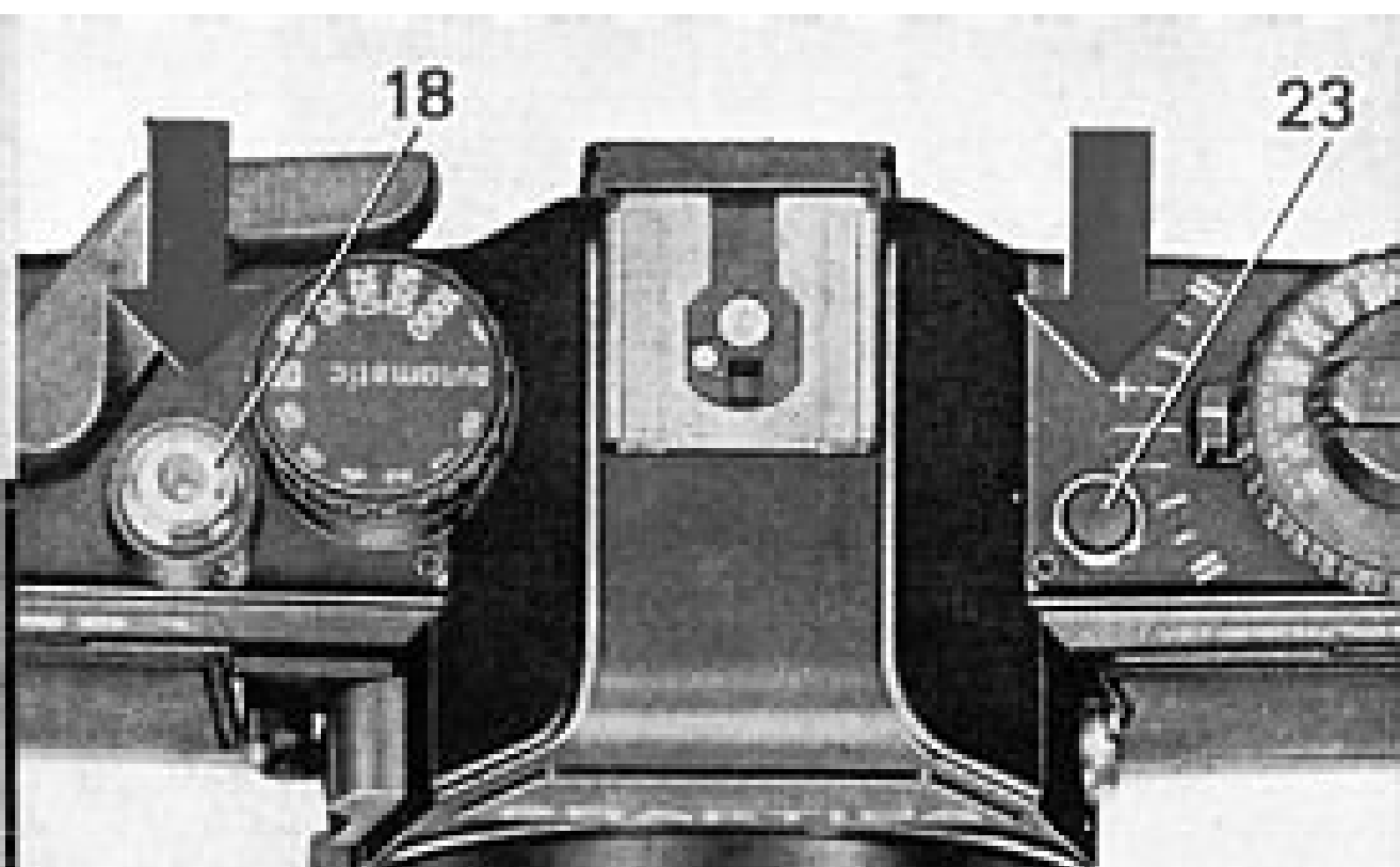
- Close back



- **Prepare to shoot**
Carry on releasing and cocking until frame counter (5) indicates frame 1.
- **Reset mode selector (19) to "automatic"**
- **Set film speed**
Press unlocking key with ASA markings (24) and turn dial (10) to set the film speed.
- **Select aperture**
Set the desired aperture using aperture setting ring (27).
- **Focus**
Triple wedge: object is in focus when its contours and lines flow naturally
Microprism ring: when focused correctly the object is clear and flicker-free
Ground glass ring: used with poor lighting (e. g. for close-ups); image should appear clear and sharp
- **Release shutter**
Depress shutter release (18) slightly; the camera's automatic system starts to work and an LED shows the shutter speed. If the speed suits the subject, release the shutter; if not, alter the aperture.

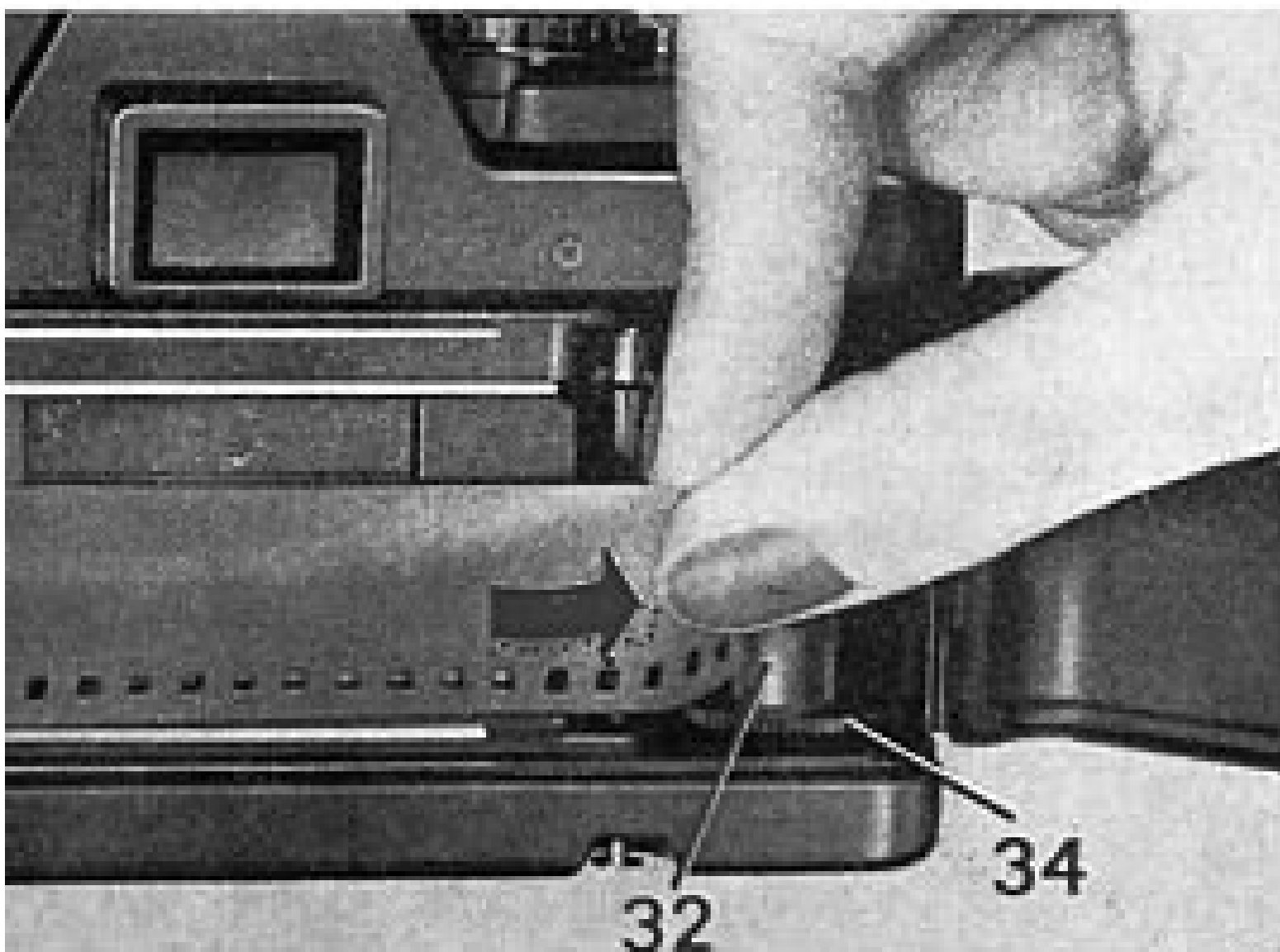
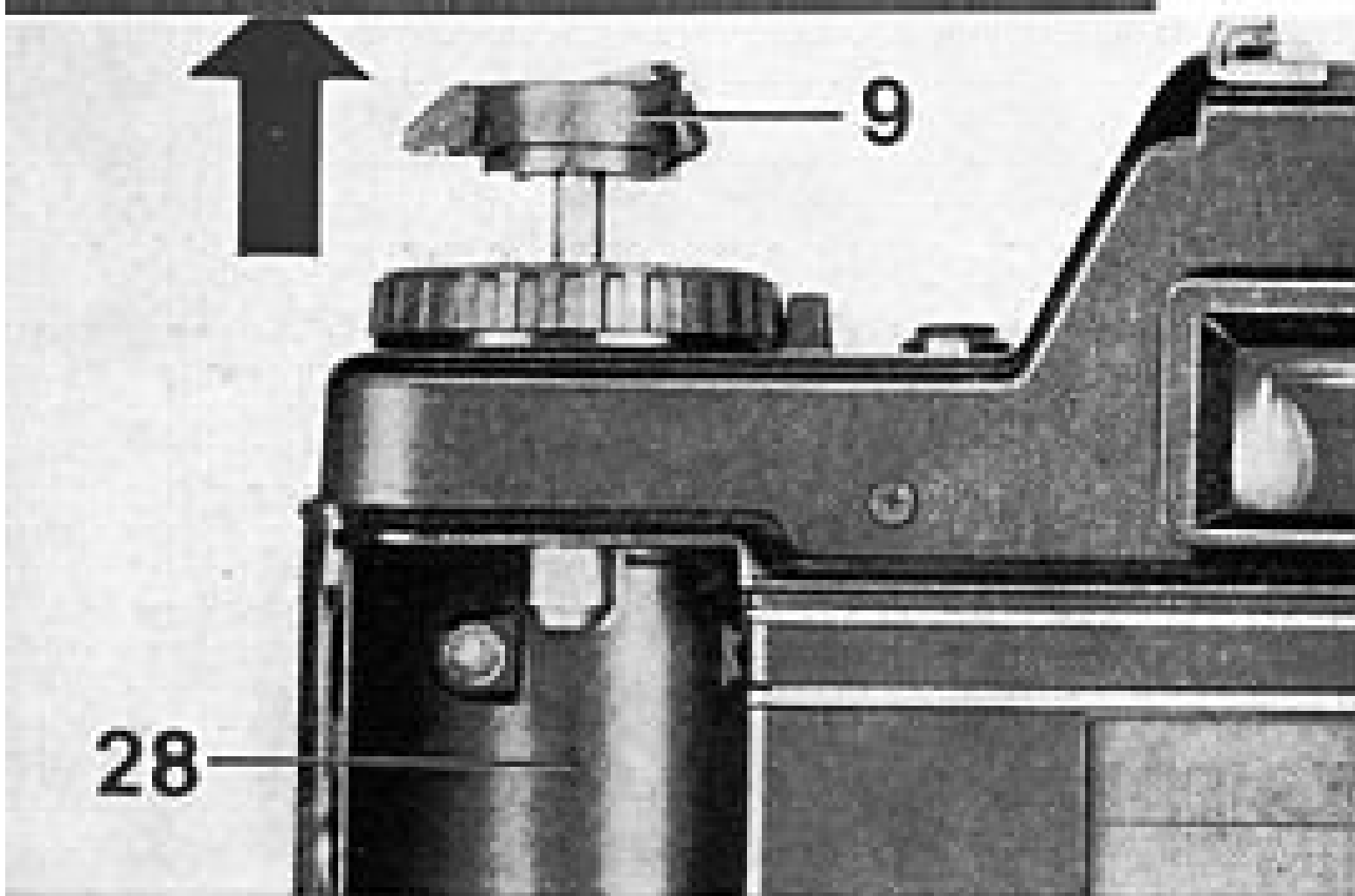
- **Film change**
Depress rewind release (40), fold out rewind crank (8) and turn in the direction of the arrow. When turning becomes easier the film has been completely rewound. Pull rewind button (9) all the way up to unlock the back and then remove the film cartridge.
- **Lens change**
Press unlocking key (1), turn lens anti-clockwise as far as it will go and remove. Insert the lens so that the red markings are opposite one another and turn clockwise till it locks.





Inserting the battery

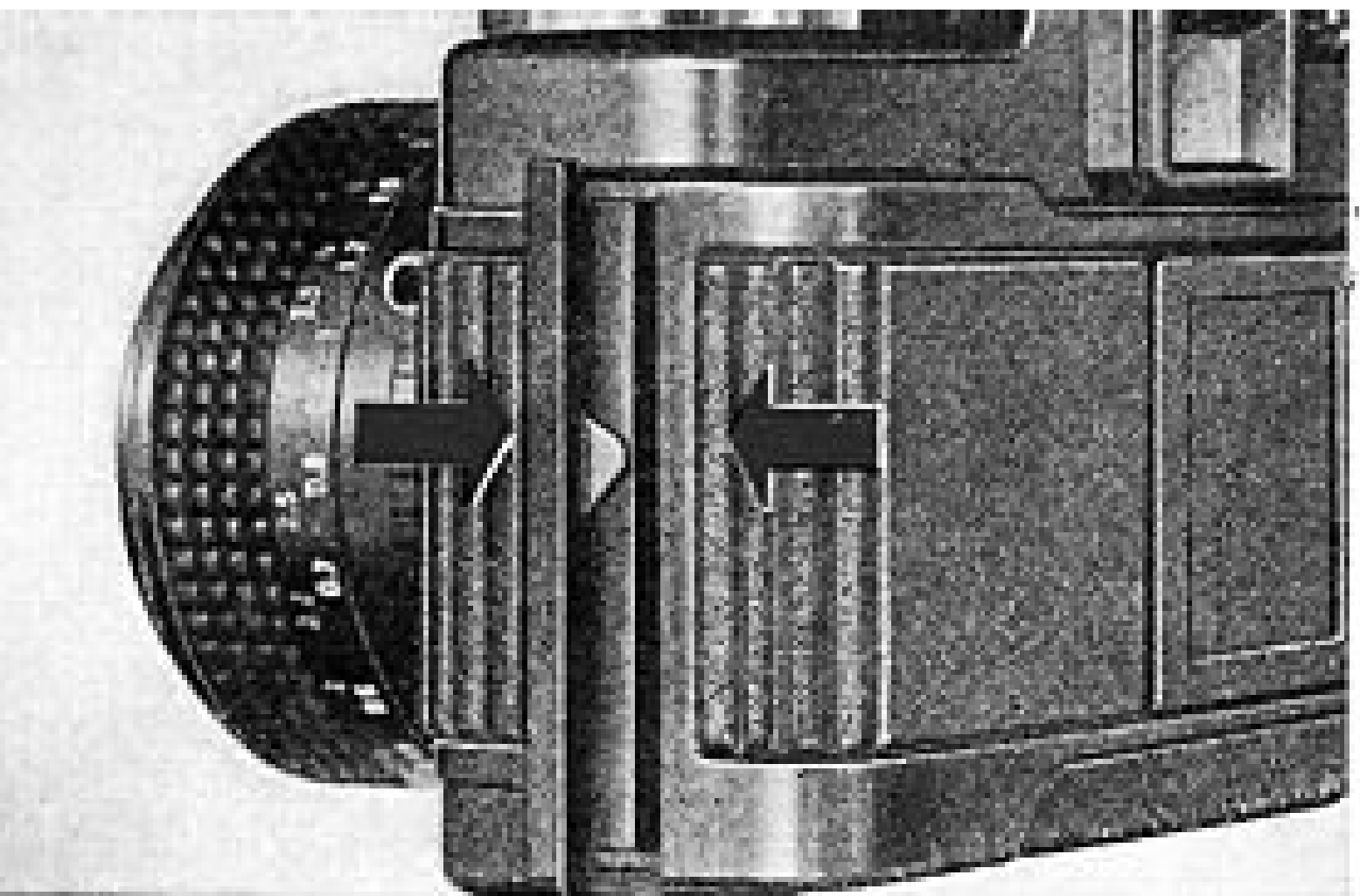
A 6 V source is required to power the whole electronic system. It may be an alkali-manganese, silver oxide or lithium battery. Under normal conditions, a fresh battery lasts for about 2 years. To insert the battery, turn locking screw (37) of the battery compartment lid (36) anticlockwise until the lid can be opened. Wipe the contacts in the battery compartment and those of the fresh battery with a dry cloth. Press the plus pole of the battery against the spring contact (polarity marks on battery compartment lid) and tip the battery in. Close and lock the lid.



Checking the battery

The shutter must be cocked. Press shutter release (18) and then memory button (23). If the LED indication is bright the battery still has a sufficient power reserve. When the battery is used up the LED goes out. In the B and $\frac{1}{2}$ settings it is not possible to check the battery.

Special attention should be paid to the battery and contacts. Frequent checks are advisable, cleaning when necessary. The battery is sensitive to low temperatures and should be suitably protected. When the camera is not being used for lengthy periods the battery should be removed from the camera.



Opening the back

Pull rewind button (9) up as far as it will go to unlock the back. Open the back completely; the frame counter (5) will automatically return to the starting position. Insert the film cartridge into the cartridge compartment (28). Press the rewind button (9) back in all the way, turning it if necessary.

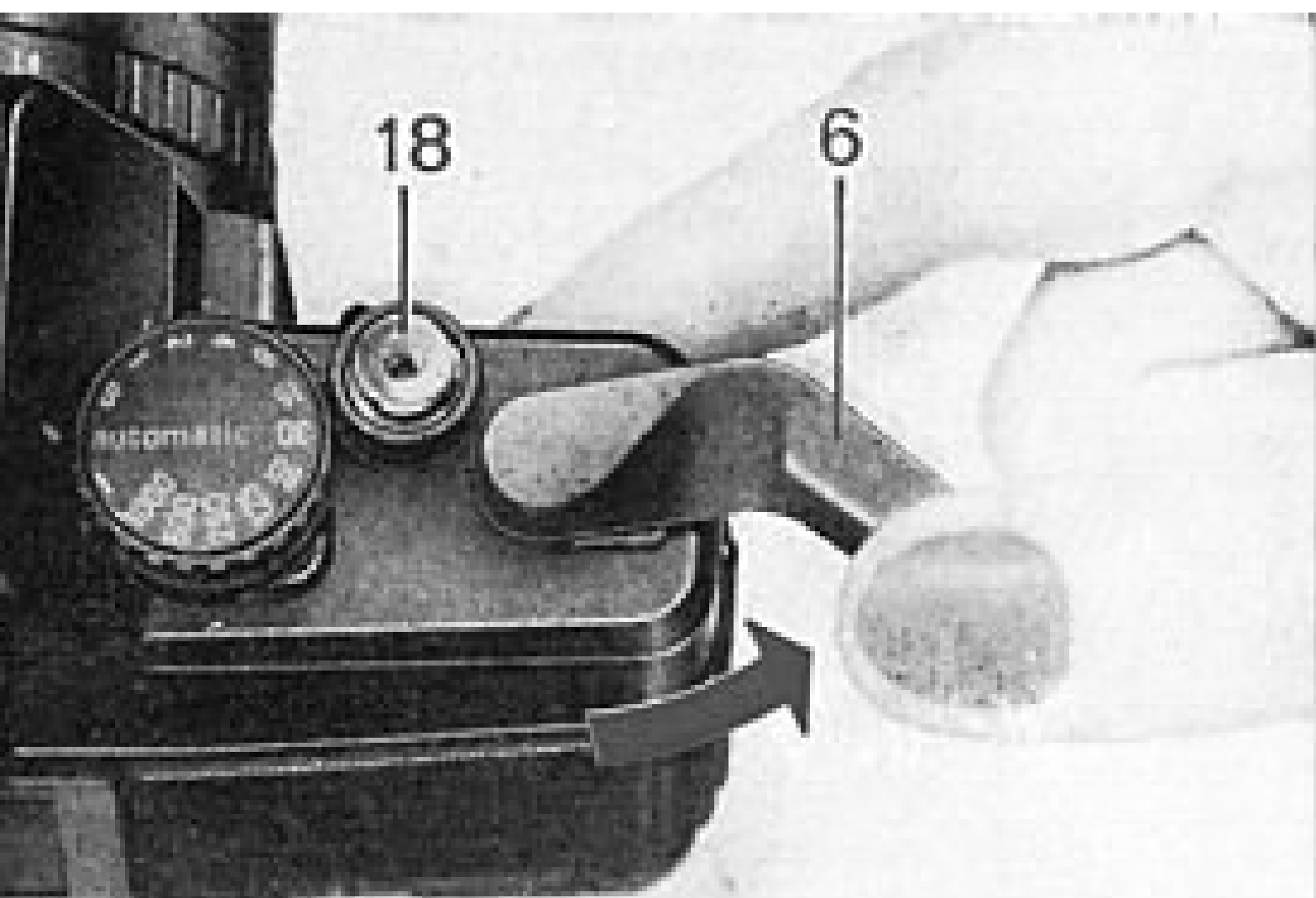
Inserting the film

Before the film is inserted the mode selector (19) should be set to $\{$ (approx. $\frac{1}{500}$ s) as otherwise a slow shutter speed may be formed in the automatic setting. The cocking lever can't be swung until the shutter has completed its cycle. Do not use force. A slow shutter speed so formed can be cut short by changing from automatic to B.

Insert the start of the film at least 1 cm into the slit in the take-up spool (32). Then turn the spool by the knurled base (34) towards the middle of the camera through about one revolution. The teeth of the film sprocket (33) must engage in the perforation in the film. Check that the film is running properly by carefully operating the cocking lever (6).

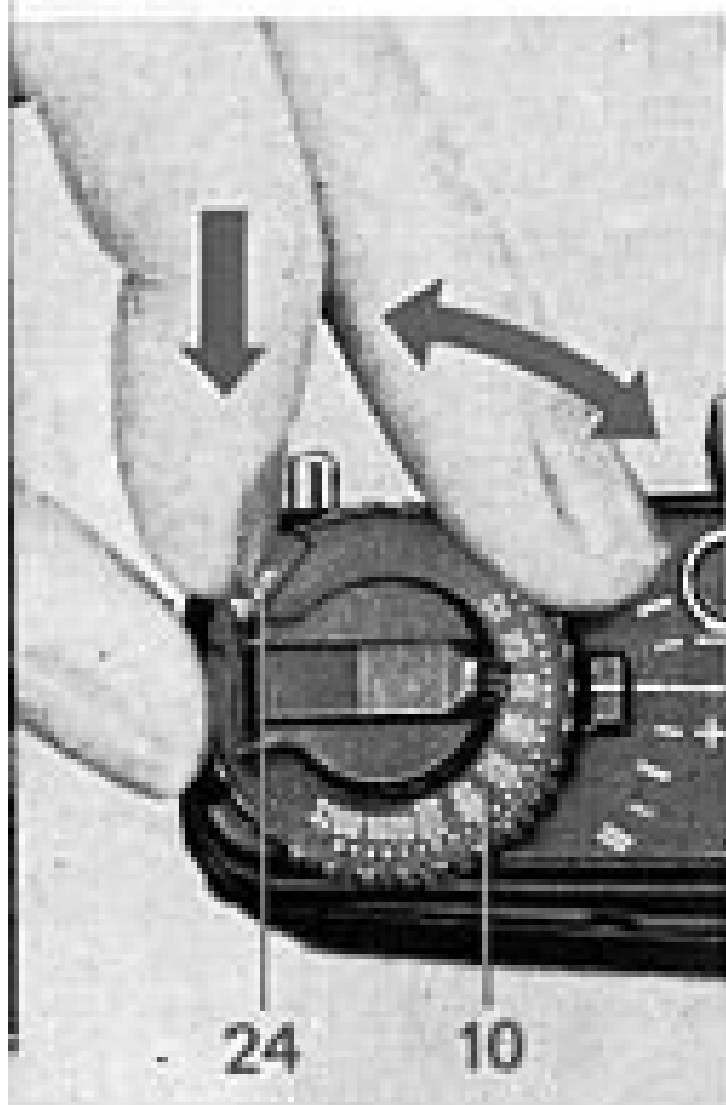
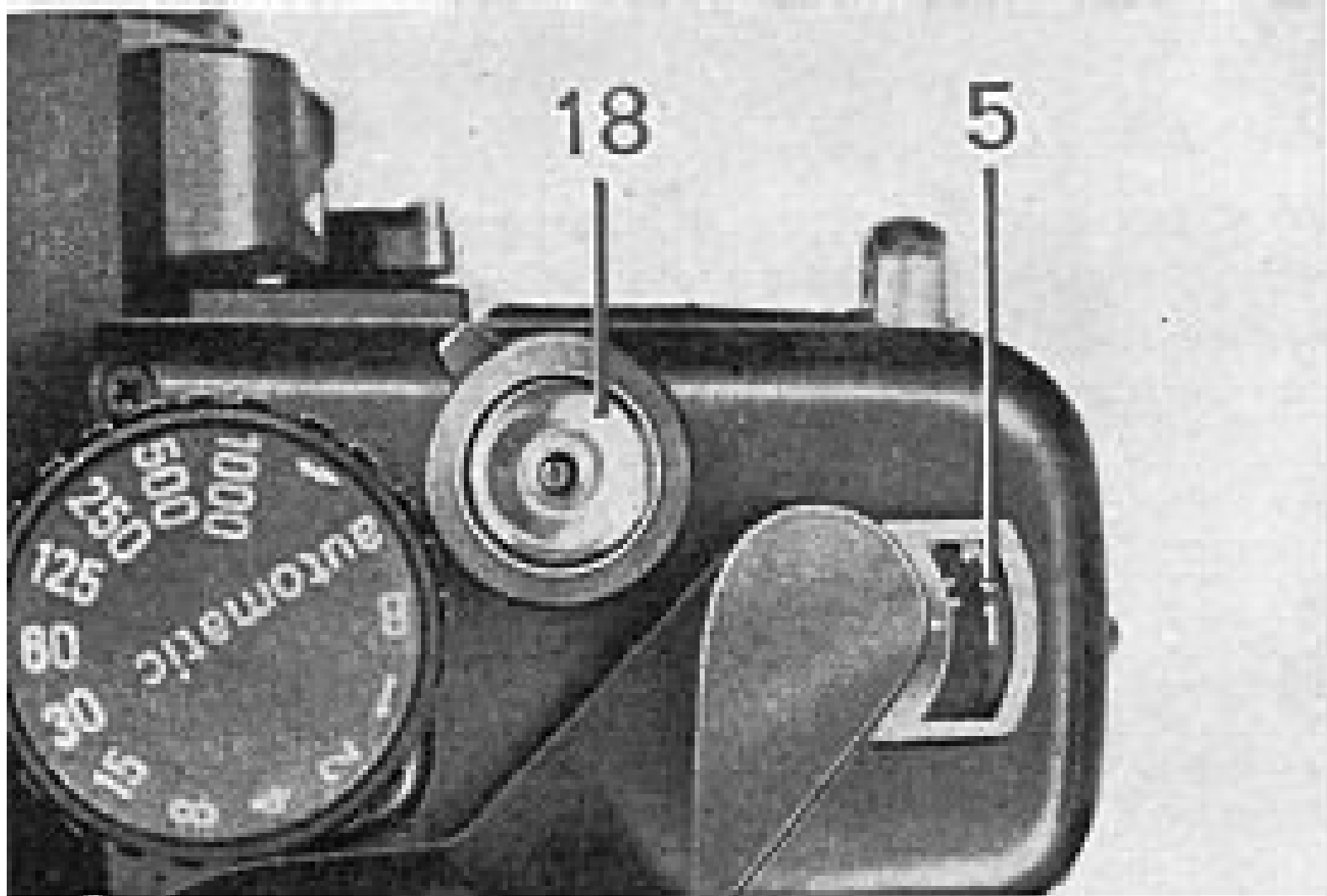
Closing the back

Press the middle of the lock side of the back against the camera body until the lock is heard to engage.



Preparing to shoot

The cocking lever (6) may be swung out a little way without starting the winding procedure. This readiness position increases handling reliability when taking rapid picture sequences. Swing the cocking lever as far as it will go, return and press the shutter release (18). Repeat the procedure and continue to do so until the automatic frame counter (5) indicates frame 1. Proper film advance can be checked by making sure the rewind button (9) rotates as the cocking lever (6) is moved.



ISO/	16	20	32	40	64	80	125	160	250	320	500	640	1000	1250	2000	2500
ASA	12	25	50	100	200	400	800	1600	3200							
DIN	13	14	16	17	19	20	22	23	25	26	28	29	31	32	34	35
	12	15	18	21	24	27	30	33	36							

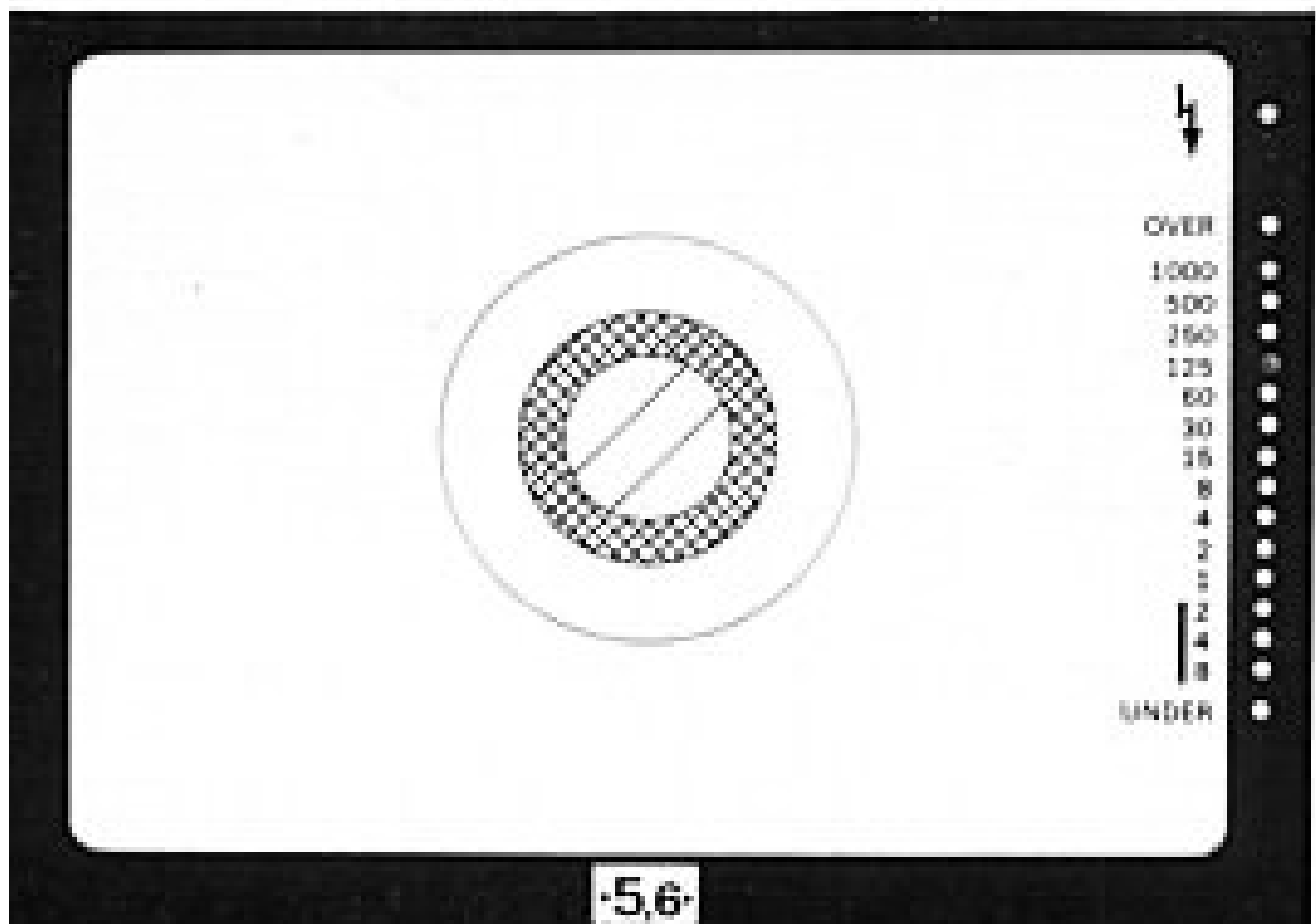
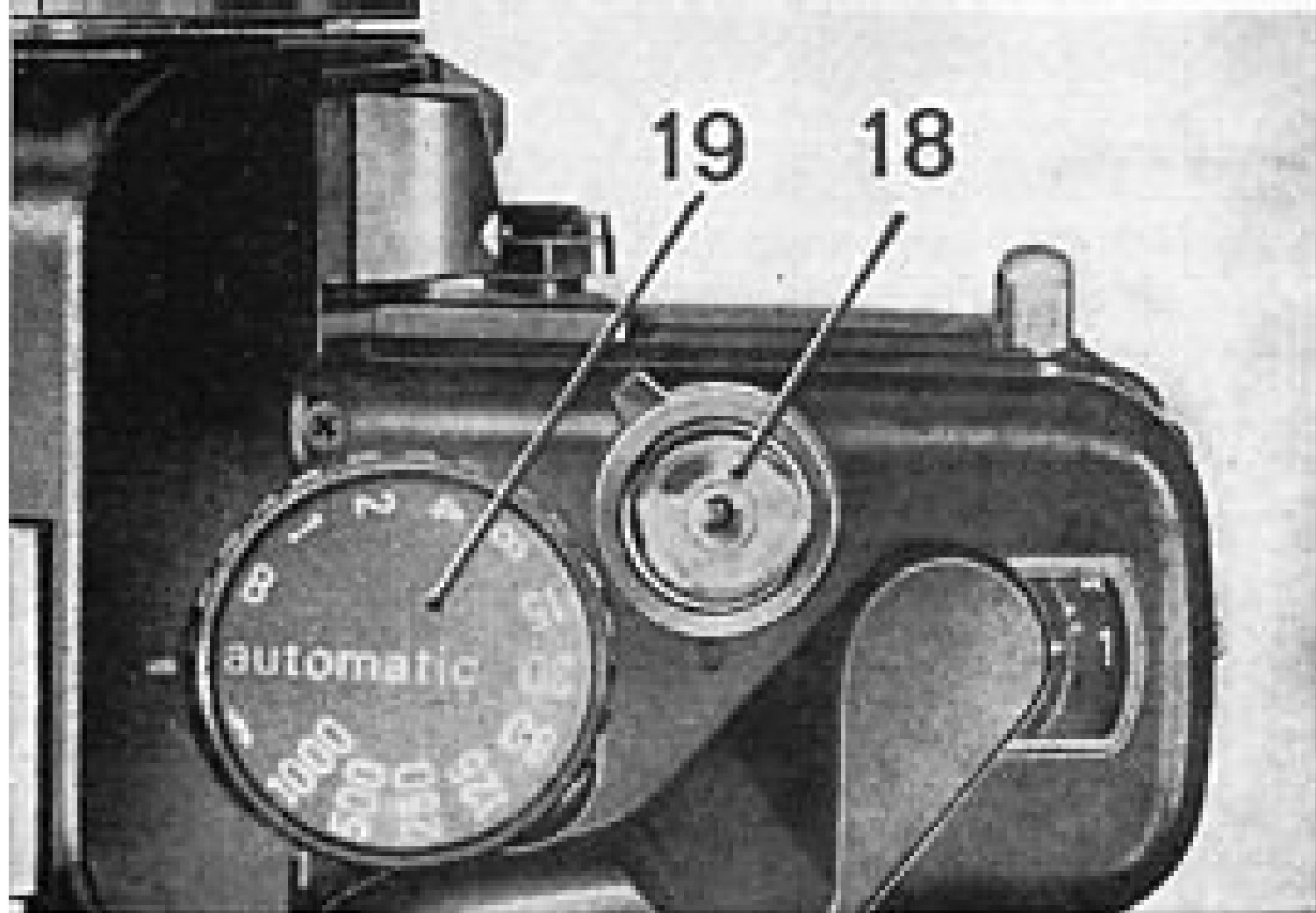
Setting the film speed

Press the unlocking key (24) and turn the dial (10) to set the ISO/ASA speed value given on the film pack. The flap from the film pack can be put into the film information holder (38) as an additional aid to the memory.

Automatic shutter speed control

In the automatic mode the PRAKTICA BC 1 operates automatically in a stepless shutter speed range from $\frac{1}{1000}$ s to 40 s. The shutter speed is electronically controlled in line with the lighting conditions, the selected aperture and the film speed. LEDs at the edge of the viewfinder indicate the controlled shutter speed. Where the shutter speed range is exceeded this is indicated by OVER and UNDER. The TTL metering automatically takes into account all factors influencing the exposure such as focal length of the lens, filter and extensions. If lenses with the M 42 x 1 PRAKTICA screw-thread are used with an adapter, light metering is automatic at working aperture.



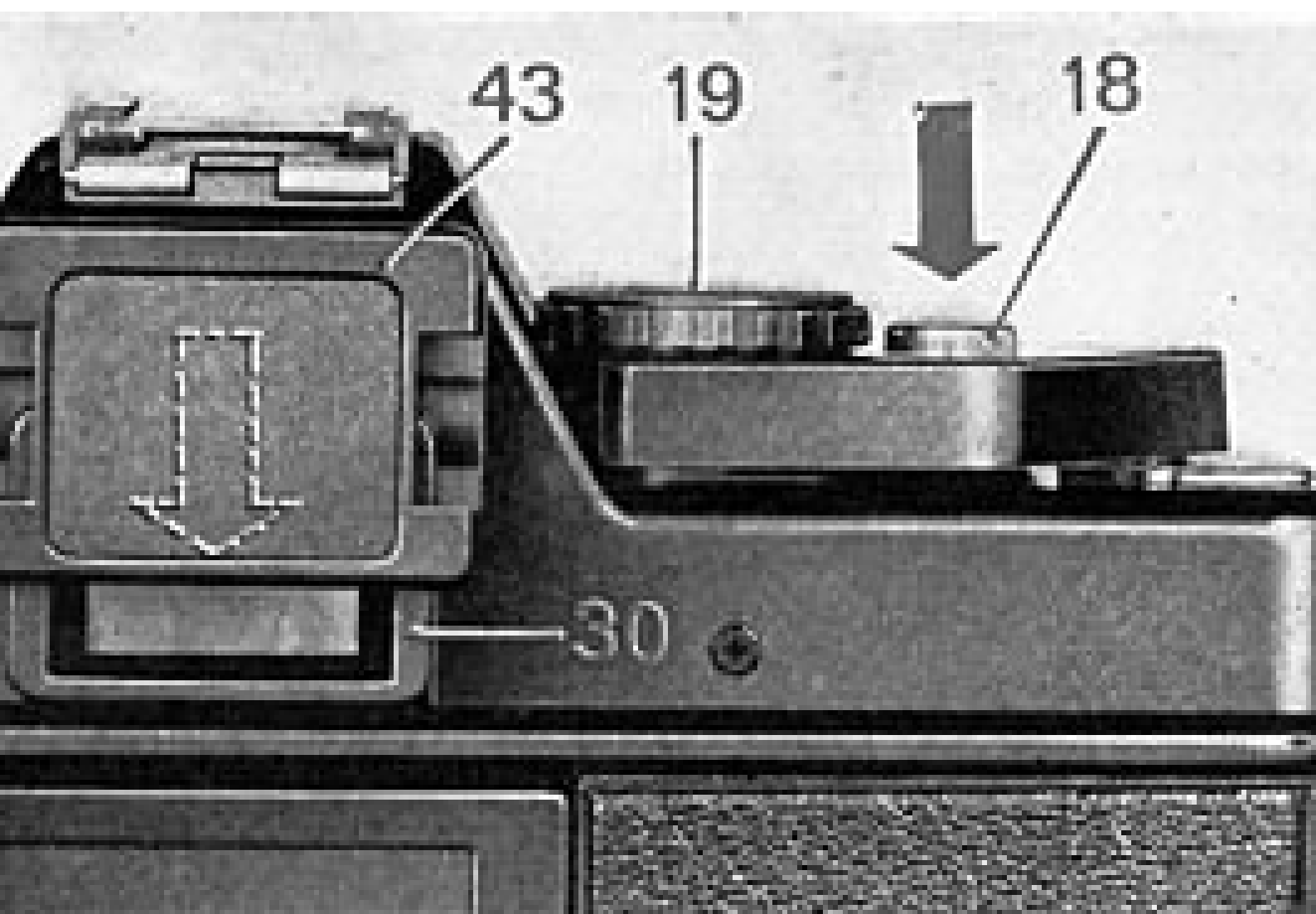


Aperture preselection

The desired aperture is set against the mark on the lens mount by turning the aperture setting ring (27). The set aperture is displayed at the bottom of the viewfinder image. As a guide, the selection of the following values can be recommended for a film speed of 80 ISO/ASA = 20 DIN:

	aperture
sunshine	8—11
cloud cover	4—5.6
close-ups	not below 8

The choice of aperture can also be made according to the desired depth of field (foreground, mid-ground, background) and by taking into account the speed information in the viewfinder (danger of blurring). See also the section on depth-of-field indication. A small aperture means a large depth of field, a large aperture a correspondingly smaller depth of field.



Automatic exposure, indication

Set the mode selector (19) to "automatic". The electronics are switched on by slight pressure on the shutter release (18). In the viewfinder image the shutter speed calculated by the automatic system is shown by an LED display. If it appears unsuitable for the subject, it can be corrected by selecting another aperture. LEDs are allotted to selected speeds between $\frac{1}{1000}$ s and 8 s, with intermediate values being indicated by the simultaneous lighting of two adjacent diodes.

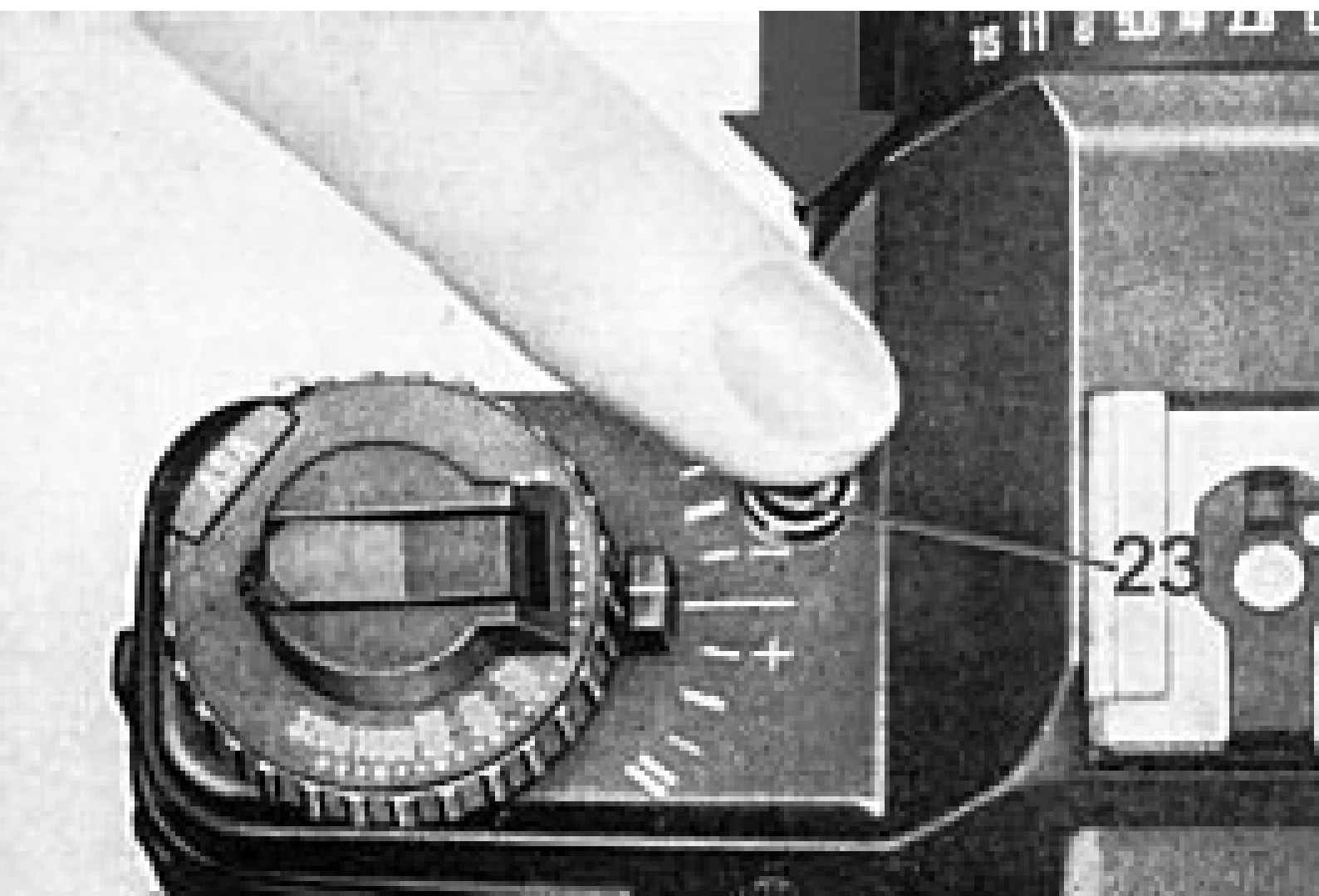
Shutter speeds between 8 s and 40 s are indicated by the permanent lighting of the UNDER LED, while speeds outside the $\frac{1}{1000}$ s to 40 s range are indicated by the flashing of the LED at OVER or UNDER. In this case the shutter is set for $\frac{1}{1000}$ s or 40 s. If shutter speeds of $\frac{1}{15}$ s and slower are formed, the use of a tripod or other steady surface is recommended.

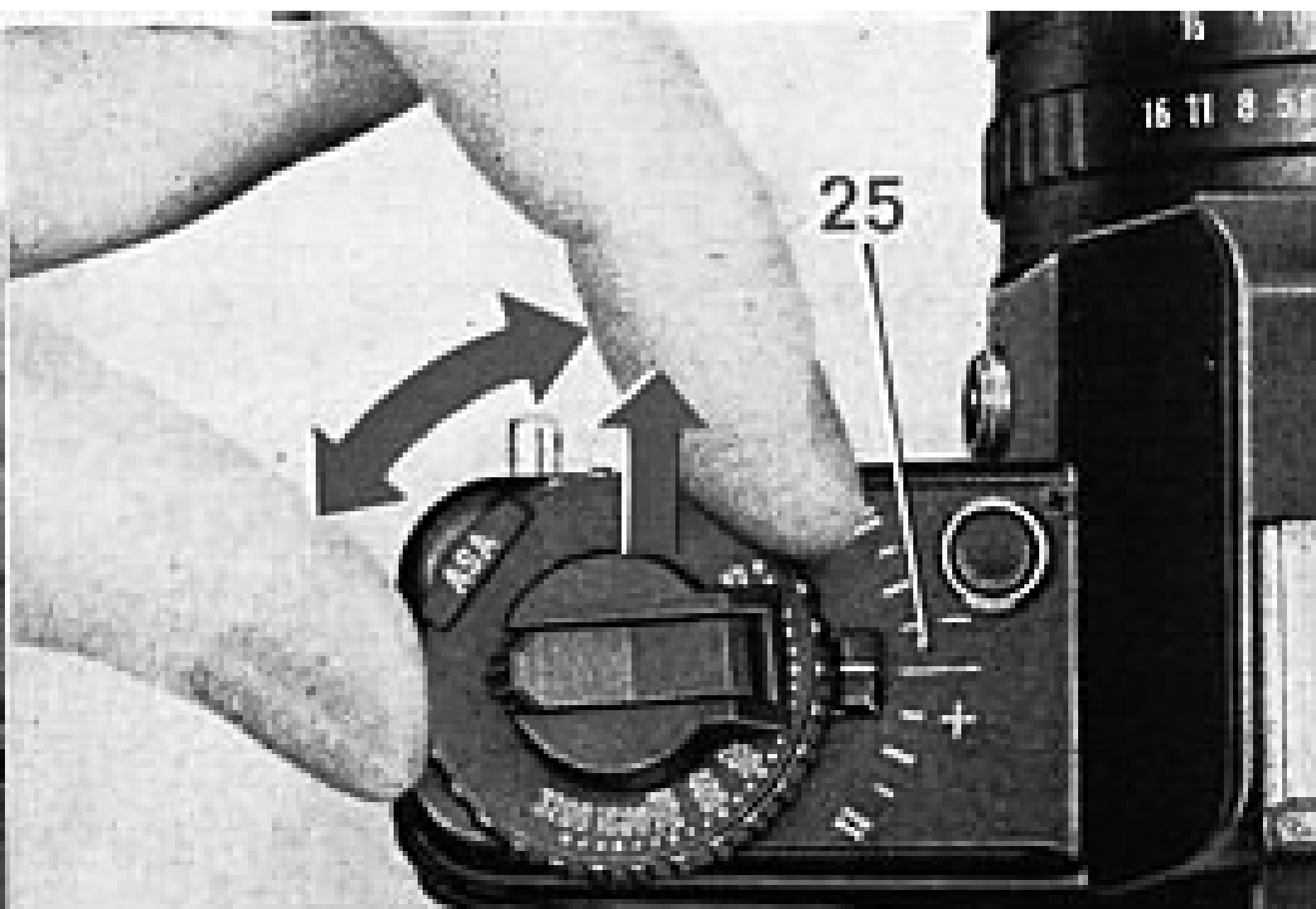
Shutter release

After the shutter speed has been checked in the viewfinder, the shutter is operated by fully depressing the shutter release (18). When pressure is released from the shutter release the electronics are automatically switched off. With slow shutter speeds the removal of pressure from the shutter release does not affect the exposure procedure. In this case the electronics are switched off only when the shutter cycle has been completed.

If the cycle needs to be broken off prematurely with a very long shutter speed (e. g. after an accidental shutter release), the mode selector (19) should briefly be turned to B.

If the camera is not held at eye level during automatic operation (e. g. with tripod shots), the eyepiece cover (43) which comes with the camera should be pushed into the holder (30).





Locking of metered values

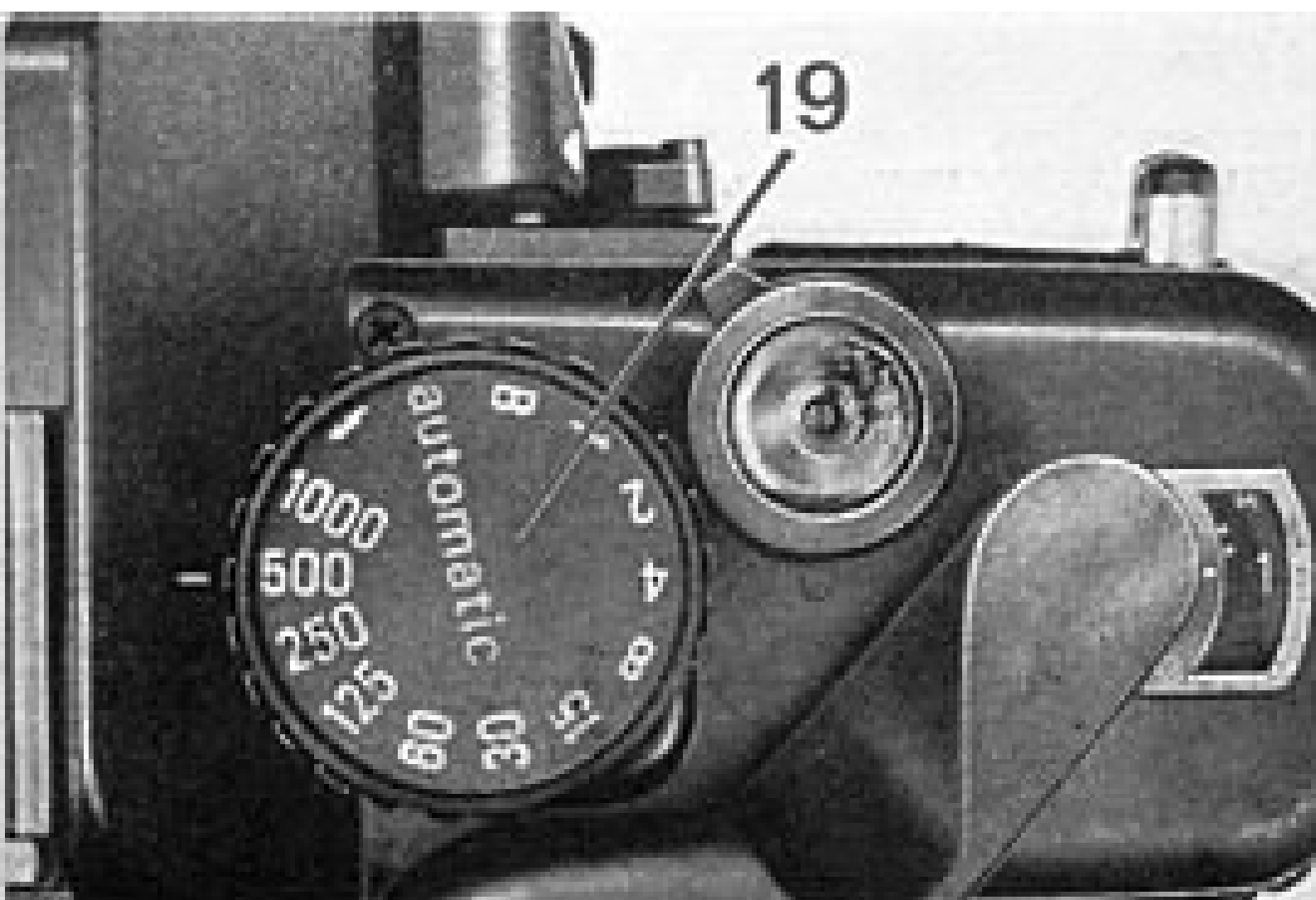
If the subject features extreme contrasts, such as

- people wearing dark clothes in sunlit snow or
- a light-coloured object in front of a dark background

the exposure value can be calculated by individual metering of the most important element in the picture from close-up. The value calculated in the close-up measurement is stored, and the image section can be changed without another shutter speed being formed.

To store the metered value first depress the shutter release (18) slightly to initiate the metering process and then briefly press the memory button (23) to lock in the metered value. The shutter must be cocked. No new measurement is made before the shutter is released, and the shutter speed will correspond to the locked value.

The locked value is erased when pressure is removed from the shutter release and the electronics are switched off.



Exposure compensation

Another way of influencing the exposure individually is by using the exposure compensation dial (10). Such compensation is necessary when the character of the object varies greatly from the norm, e. g. with dark objects in front of a light background (+1, +2) and with bright objects in front of a very dark background (-1, -2).

Lift the dial (10) and set the marking against the required factor on the scale (25).

Starting from the initial position the shutter speed is reduced by 1 or 2 exposure factors when the dial is set to +1 or +2, respectively. The speed is correspondingly increased when the dial is set to -1 or -2. The dial can be set to half factors. At the borders of the film speed range (12 ISO/ASA and 3200 ISO/ASA) compensation by two factors is also possible.

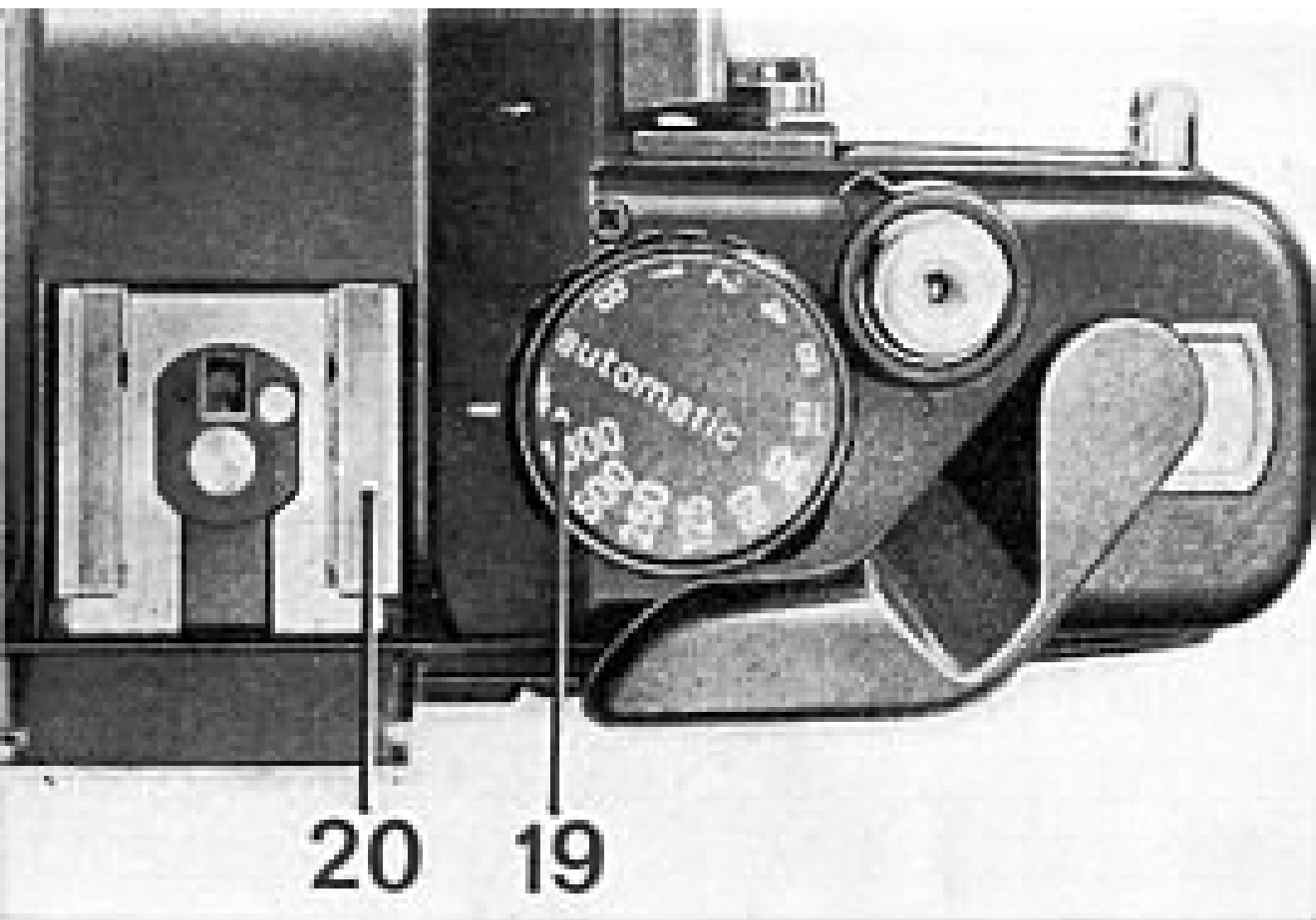
The compensation cannot extend the shutter speed range beyond the speeds of $\frac{1}{1000}$ s and 40 s. Remember to return the dial to its neutral initial position following exposure-compensated shots.

a dedicated computerised flash unit in "automatic" position. All other shutter speeds including B are electronically controlled. It is also possible to photograph with 1 without a battery.

Semi-automatic mode

If you want to shoot at a particular shutter speed, for reproductions or scientific work for example, set the PRAKTICA BC 1 to semi-automatic mode. Fixed shutter speeds from 1 s to $\frac{1}{1000}$ s and B for any length of time are available. Select the speed you want using the mode selector (19) — this automatically changes the camera operation to semi-automatic mode. As with automatic shutter speed control, the camera's electronics are switched on by gentle pressure on the shutter release.

The shutter speed can again be checked using the LEDs in the viewfinder: While the LED corresponding to the set shutter speed flashes, the shutter speed required by the lighting conditions, the film speed and the selected aperture is shown at the same time by a steadily lit LED. (For intermediate speeds two adjacent LEDs light up.) To match the two, the aperture or shutter speed should be altered until the LEDs in the viewfinder are lit steadily. With f and B settings there is no LED display. The flash speed of around $\frac{1}{90}$ s is formed mechanically with f and electronically when using



All other information on automatic speeds on the display is extinguished. When fixed speeds are used, flash readiness is indicated in addition to the information on the relevant speed on the display and in f and B settings.

To avoid incorrect exposures (overexposures) with flash when the surrounding light is bright, check by switching off the computerised flash unit that the shutter speed corresponding to the surrounding light is slower than $1/125$ s.

Flash photography

If the available light is insufficient for hand-held shots (e. g. indoors) or if the subject has to be additionally "brightened up", flash should be used. All fitting electronic flash units can be used, whether computerised or not.

Push the flash unit onto the hot shoe with centre contact (20); the electrical connection is thus made. In the case of flash units without the centre contact the electrical connection is made via the sync socket. The simultaneous use of two flash units is possible with the two electrically separate connections.

For electronic flash without computer control set the mode selector (19) to $\{$. The set shutter speed (around $\frac{1}{90}$ s) is formed mechanically.

Flash readiness is indicated by a green LED in the viewfinder when the flash unit is switched on and gentle pressure is applied to the shutter release.

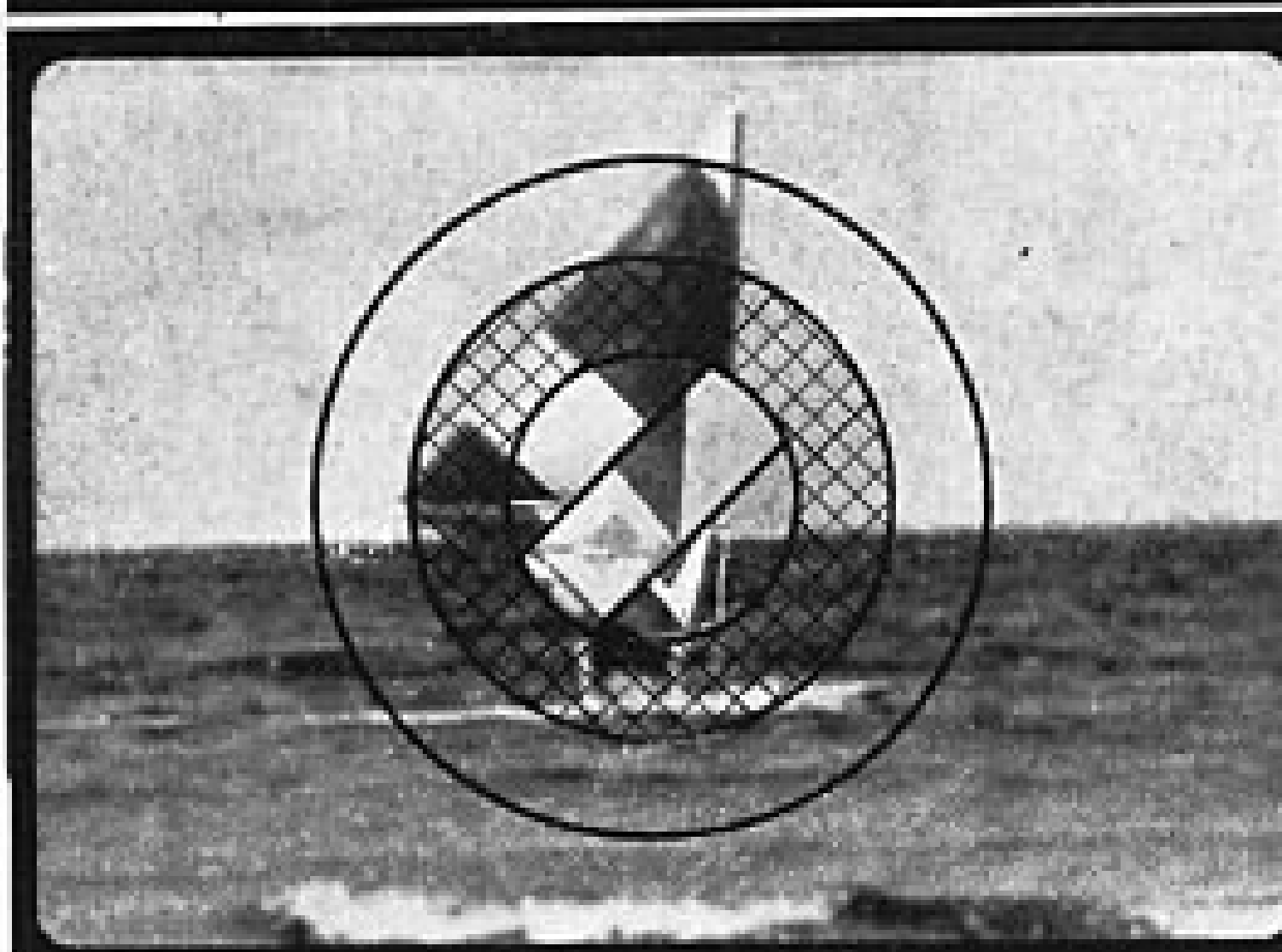
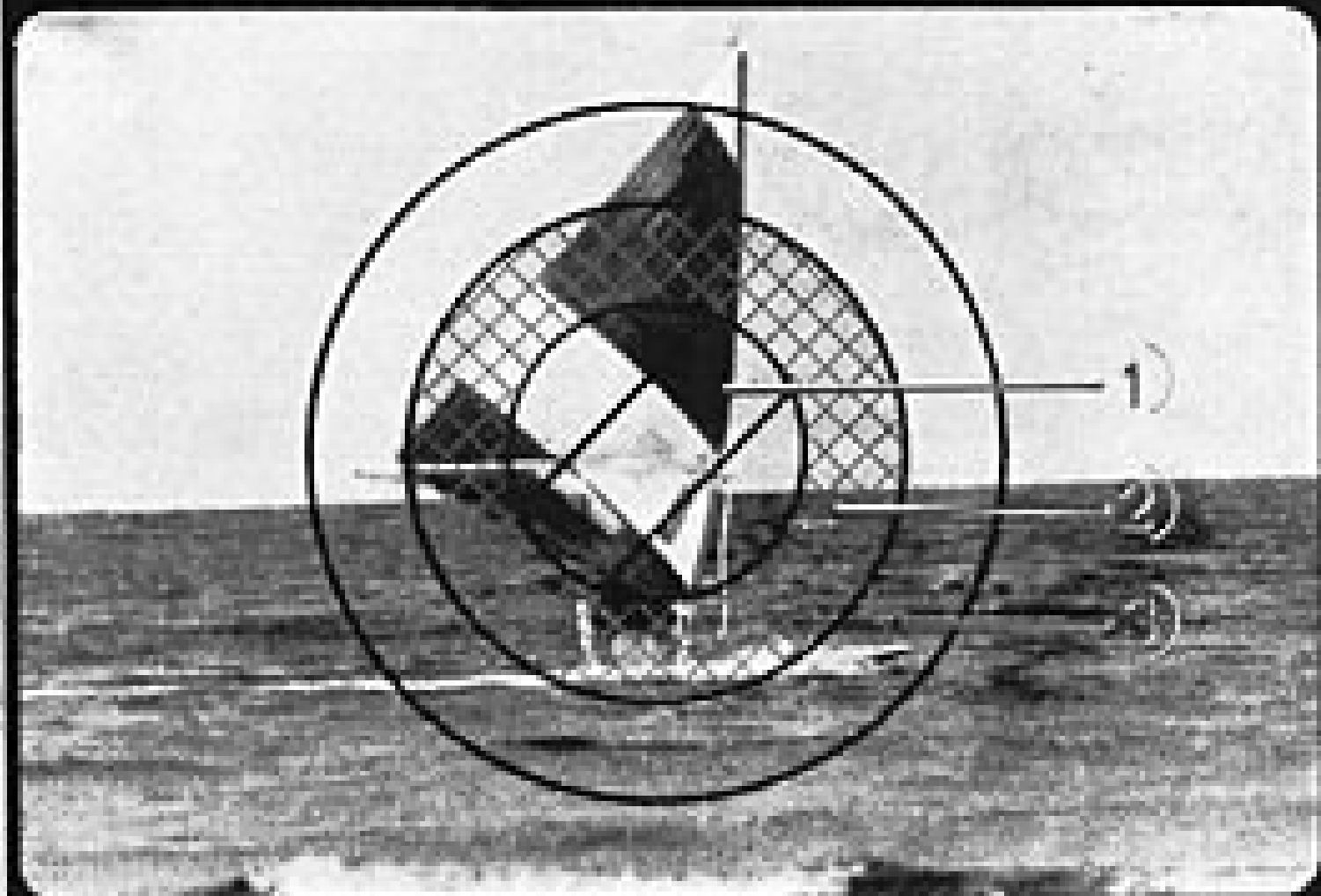


Changing the lens

Press the unlocking key (1) and turn the lens anticlockwise as far as it will go. Remove the lens from the camera.

Insert the lens in such a way that the red markings (14 and 1) on the camera and lens are opposite each other. Press the lens against the camera body and turn clockwise until the locking pin is heard to engage.

By using the PRAKTICA adapter all original PRAKTICA lenses with the M 42 x 1 thread can be connected; lenses of other makes with the M 42 x 1 thread must be suitable for PRAKTICA cameras and equipped for metering at working aperture. The PRAKTICA BC 1 also works automatically with screw-thread lenses, the only difference being that the light is metered with working aperture.



Focusing

Focusing is possible using the triple wedge system, the microprism ring or the ground glass ring.

1) Triple wedge

The wedge system allows highly accurate focusing. Optimum sharpness is achieved when the contours and lines flow naturally. Incorrectly aligned edges indicate that the image is out of focus.

2 Microprism ring

The image is correctly focused when the image inside the grid is clear and flicker-free.

3 Ground glass ring

Especially useful in macrophotograph and photomicrography and when using lenses with a small relative aperture (greater than 4). The image must appear clear and sharp in the ground glass ring.

Depth-of-field indication

The limits of the depth of field for the selected aperture can be read off from the depth-of-field scale (13) on the lens.

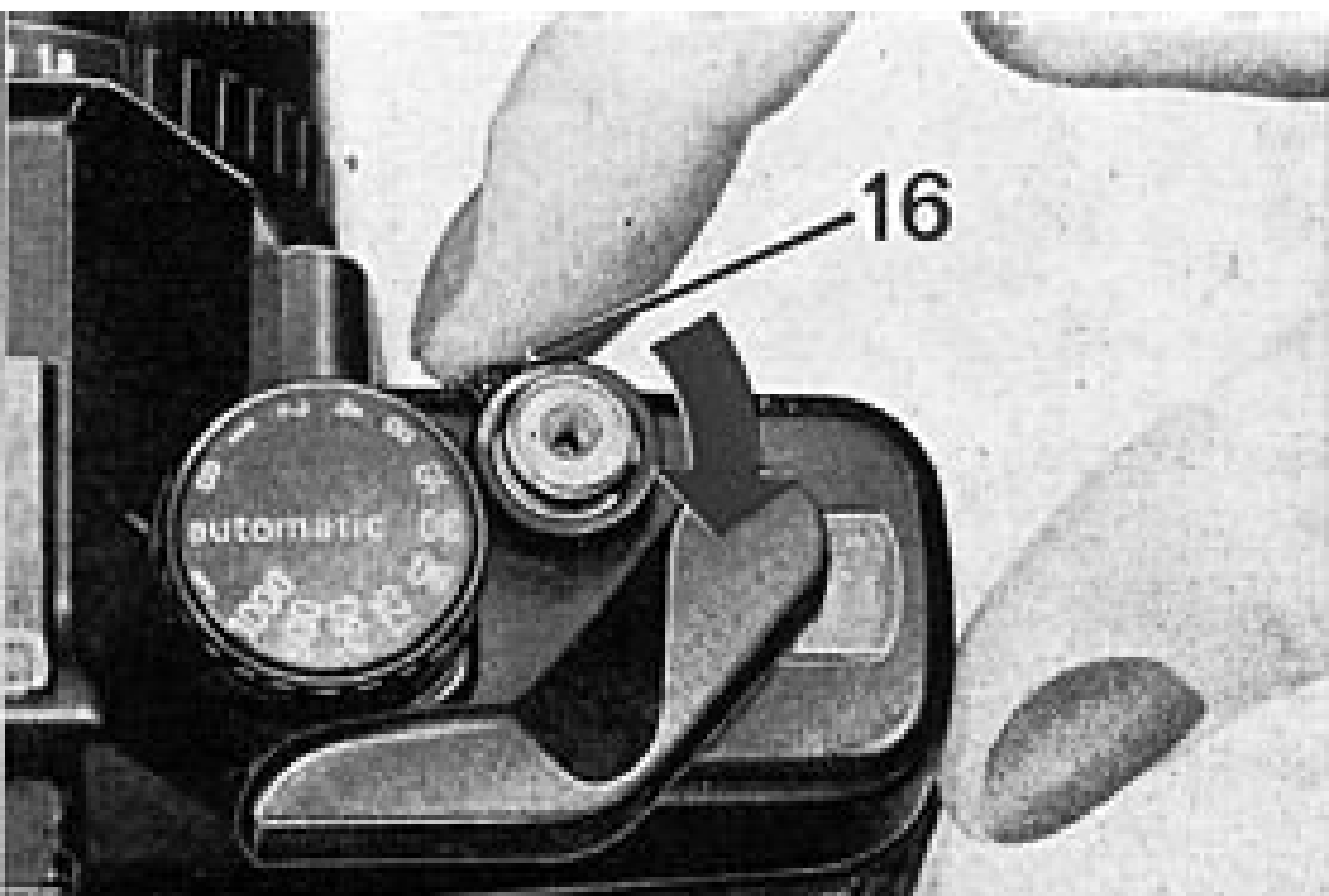
Example: distance 3 m, aperture 8 — depth of field ranges from around 2 m to 5 m.

Infrared photography

Infrared photography requires a slight correction to the focusing: match the distance determined in focusing with the infrared mark (see arrow) on the lens.

Stop-down key

The depth of field can also be judged by the ground glass ring in the viewfinder image. Push the stop-down key (4) upwards. Do not meter or release when stopping down, as this will lead to an incorrect exposure.

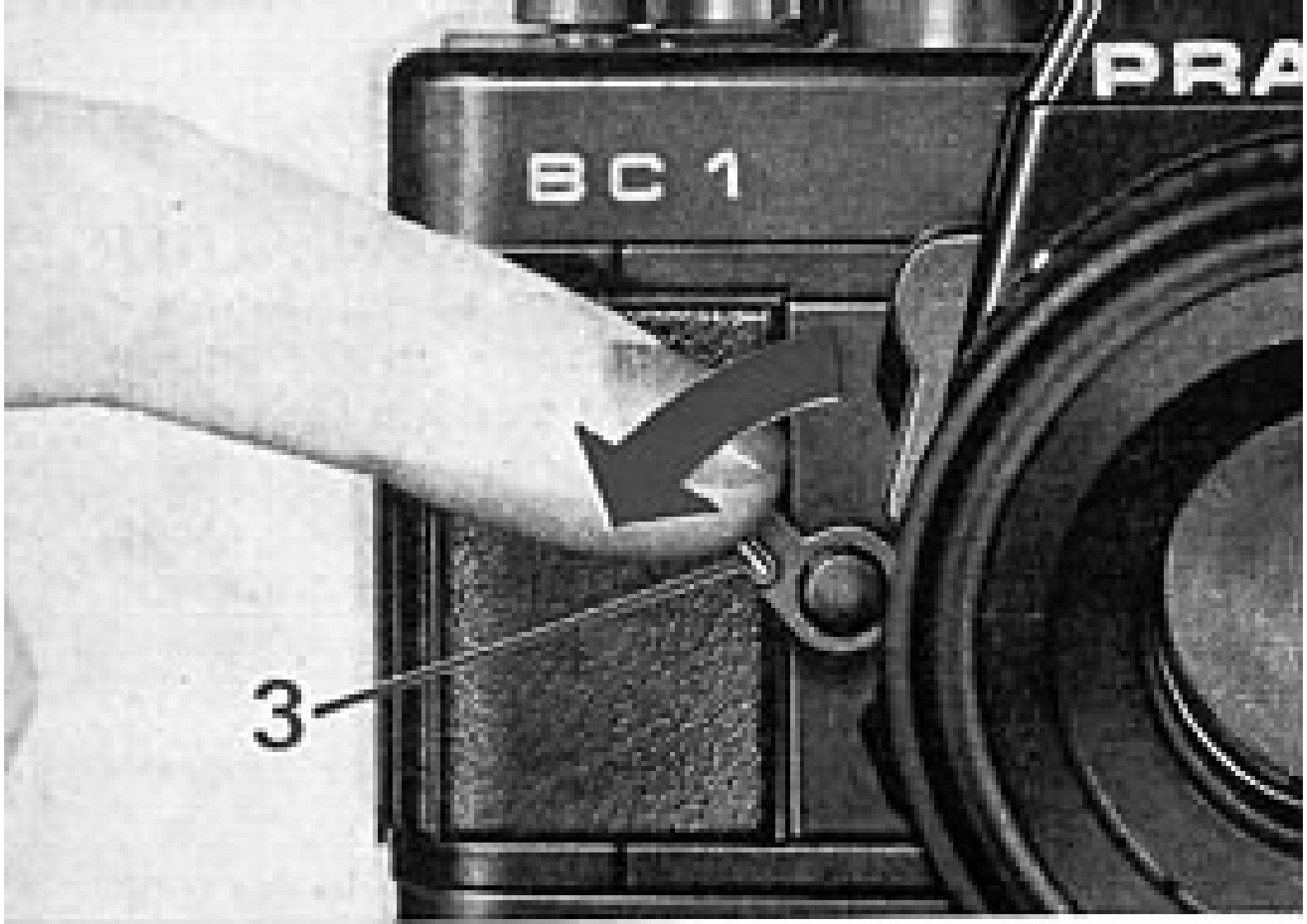


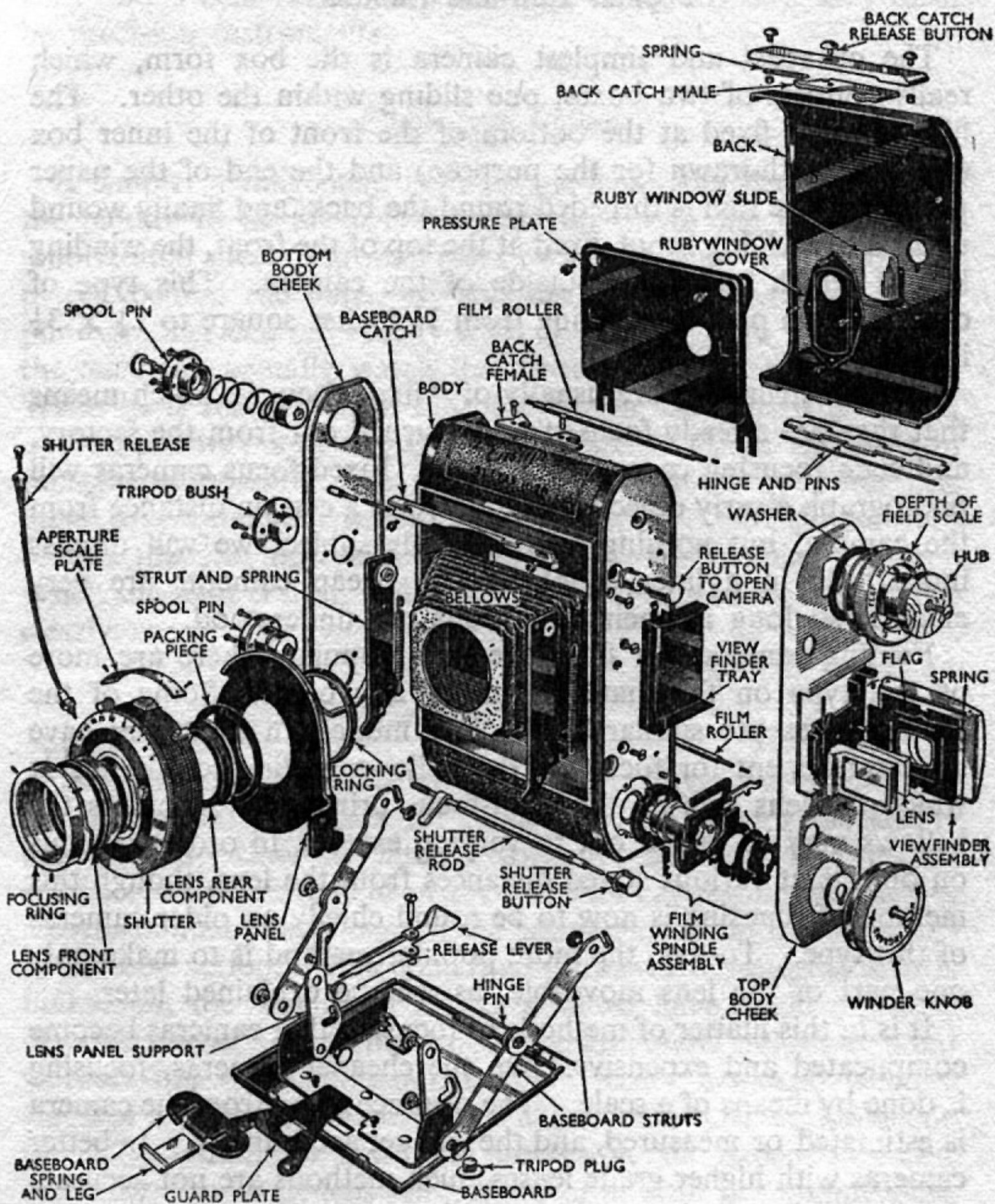
Shutter release

For ease of operation several functions have been combined in the shutter release (18). When the camera is cocked, gentle depression of the shutter release until pressure is felt switches on the automatic system and the LEDs for shutter speeds or flash readiness (with special flash units). Further pressure will release the shutter.

Locking the shutter release

Accidental exposure and unnecessary use of power as a result of unintentional pressing of the shutter release when the camera is cocked or not can be avoided by turning the release lock (16) clockwise to block the shutter release. To unlock turn in the opposite direction. Do not lock the shutter release when it is depressed.



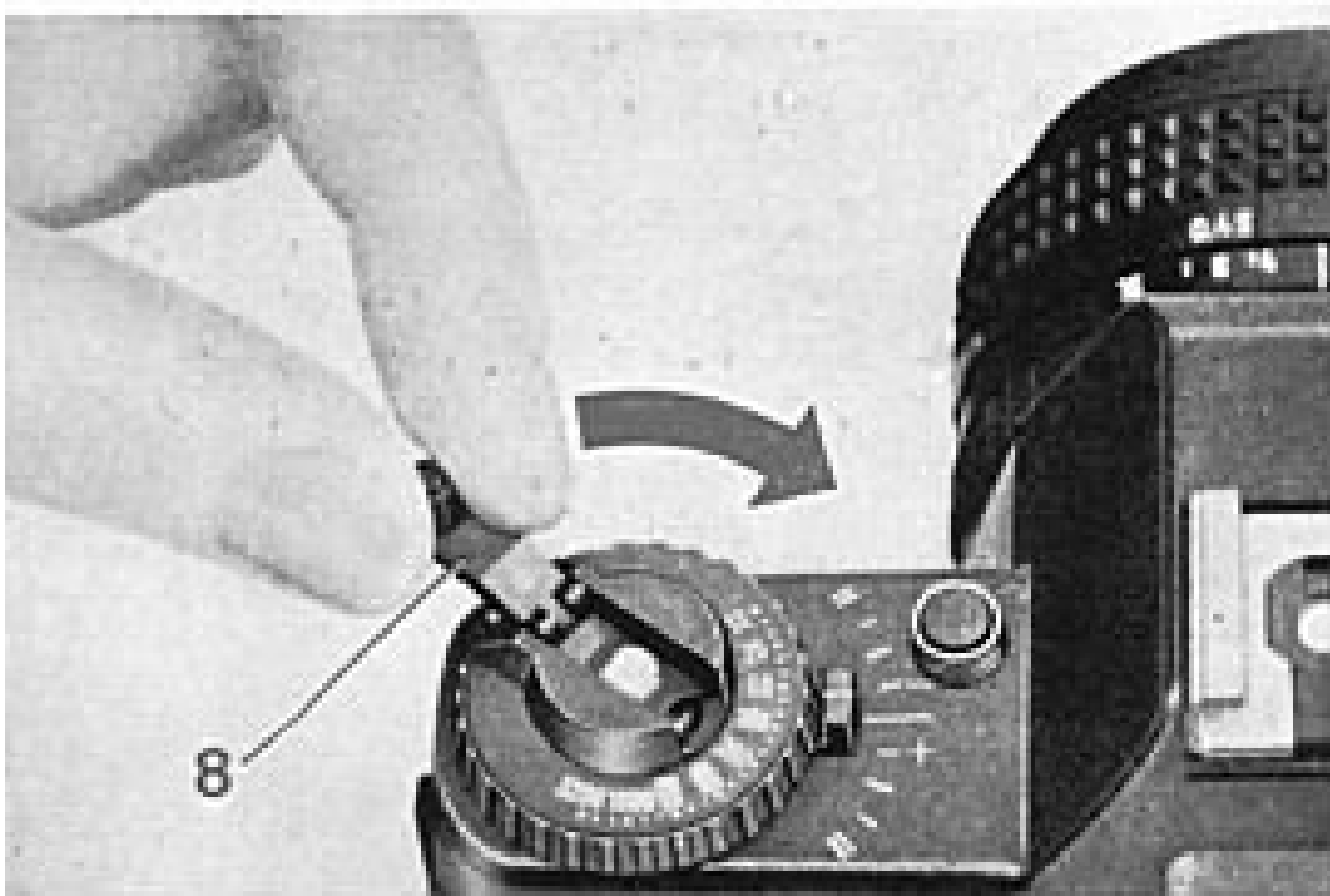
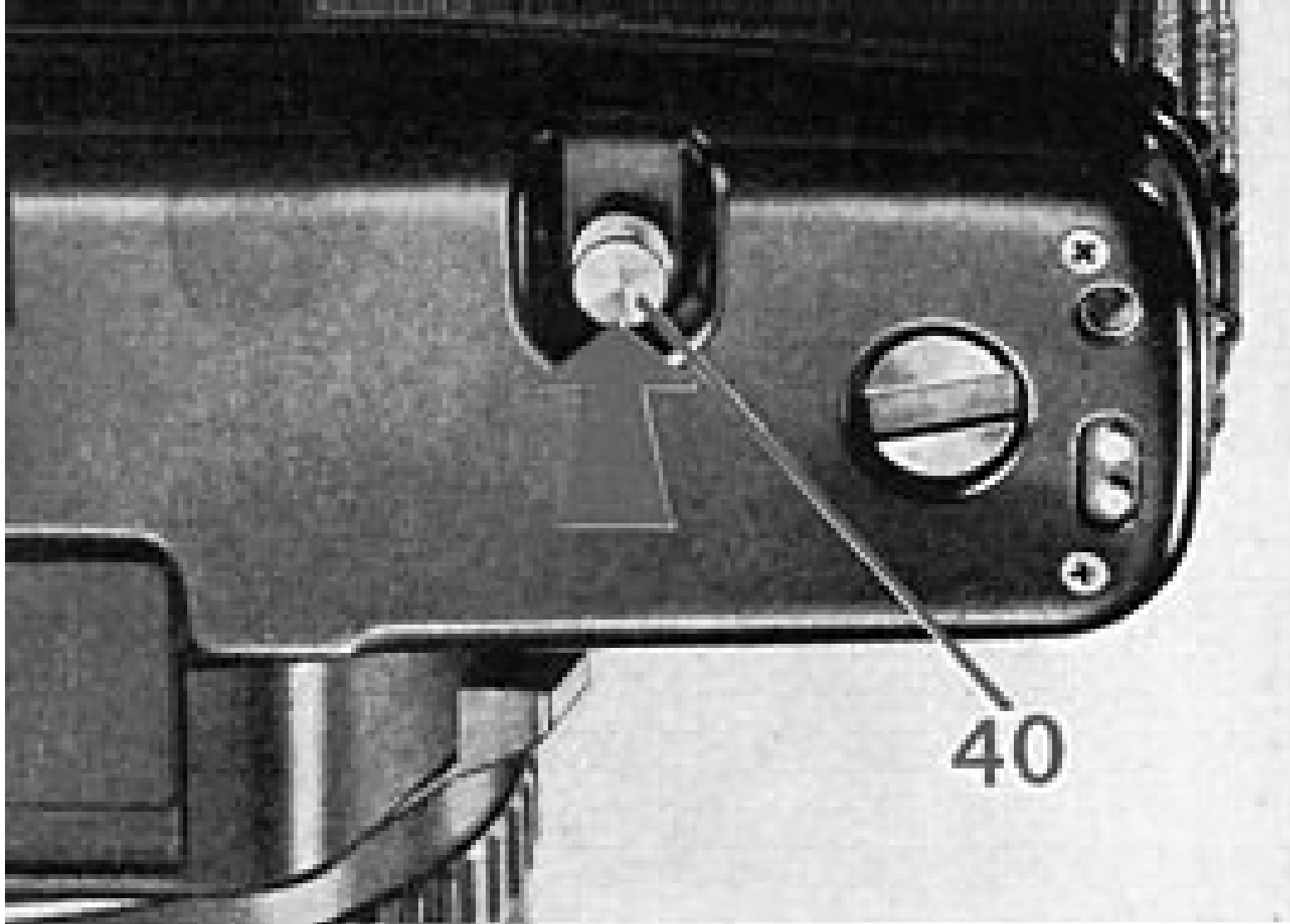


Self-timer

Cock the shutter, swing the self-timer cocking lever (3) all the way down, release the self-timer by pressing the starting button (2) at the pivot of the lever. The delay period is approximately 8 s.

Do not cock the shutter while the delay mechanism is running. If a motor winder is attached to the camera and switched on, 4 to 5 frames can be exposed during the delay period as in continuous operation with fast shutter speeds. If this is not desired, the motor winder should be switched off.

To avoid incorrect metering in automatic operation the eyepiece should be covered with the eyepiece cover supplied.



Changing the film

The frame counter (5) indicates the number of frames which have already been exposed on a film when the shutter cycle is completed. If all the frames on a film have been exposed (red mark at 20 or 36), change the film.

Press in the rewind release (40) until it locks, fold out the rewind crank (8) and turn it moderately quickly in the direction of the arrow (clockwise) until increased resistance followed by easy movement indicate that the film has been fully rewound. Pull the rewind knob all the way up to unlock the back. The film cartridge can now be removed. Do not change the film in bright sunlight.

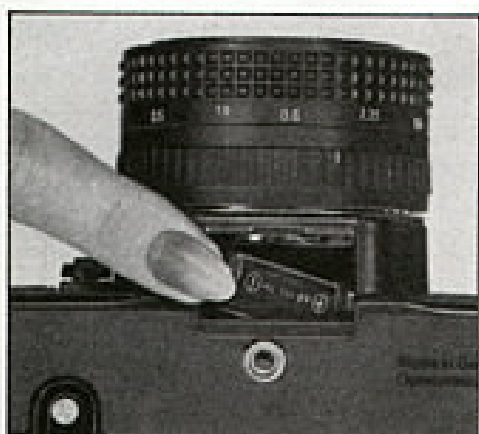
If more frames are exposed than are indicated on the film pack, it is possible that the cocking lever cannot be swung all the way. Do not use force. Wind back the film and swing the cocking lever the rest of the way.

PRAKTICA BMS

Bedienungsanleitung

Instructions for use

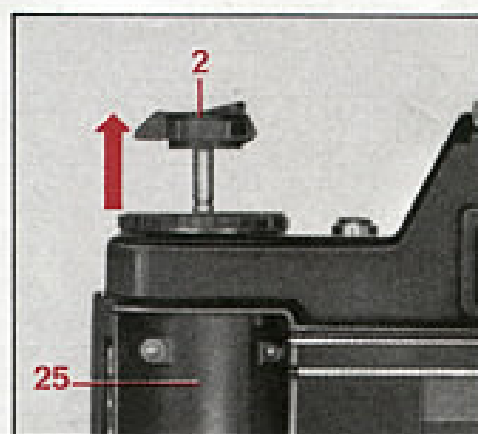
Instrucciones para el uso



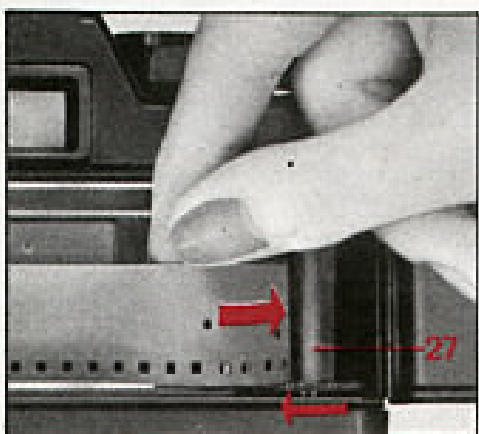
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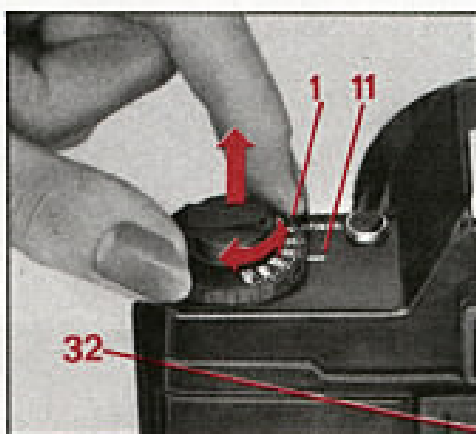
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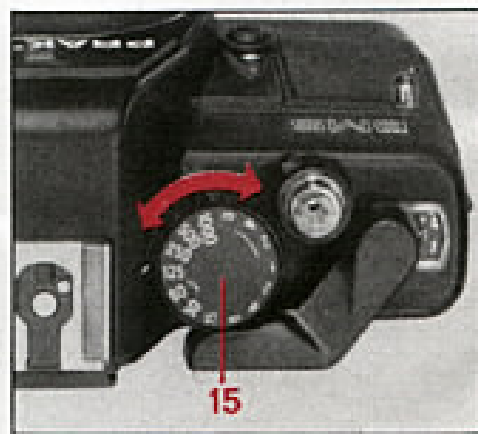
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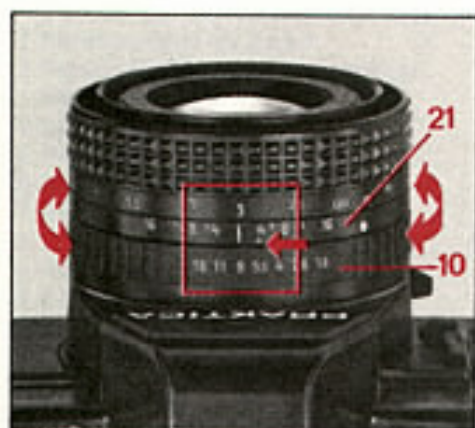
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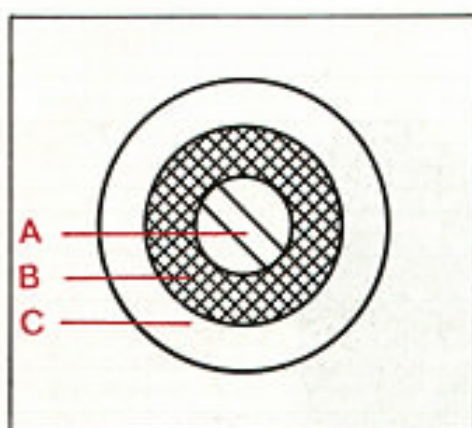
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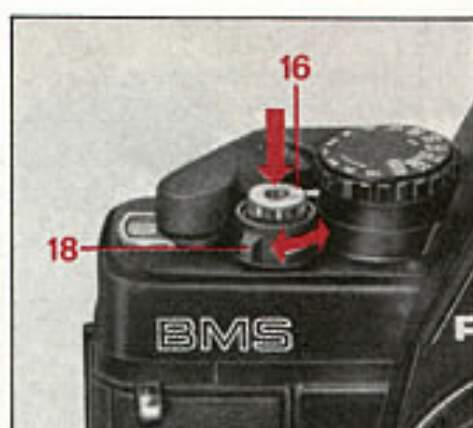
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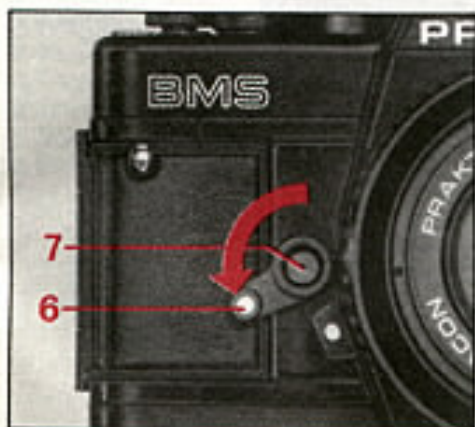
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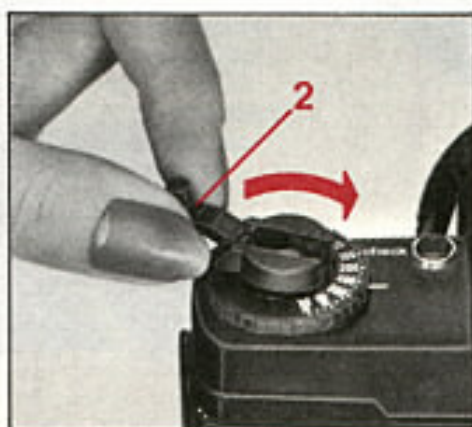
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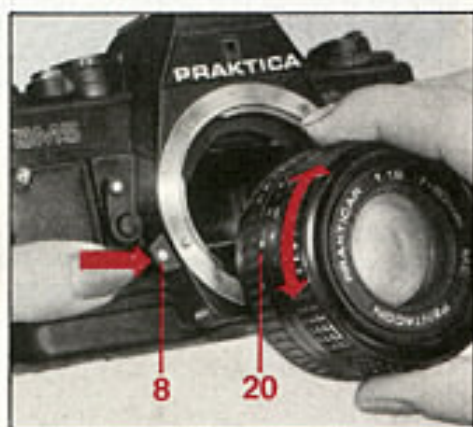
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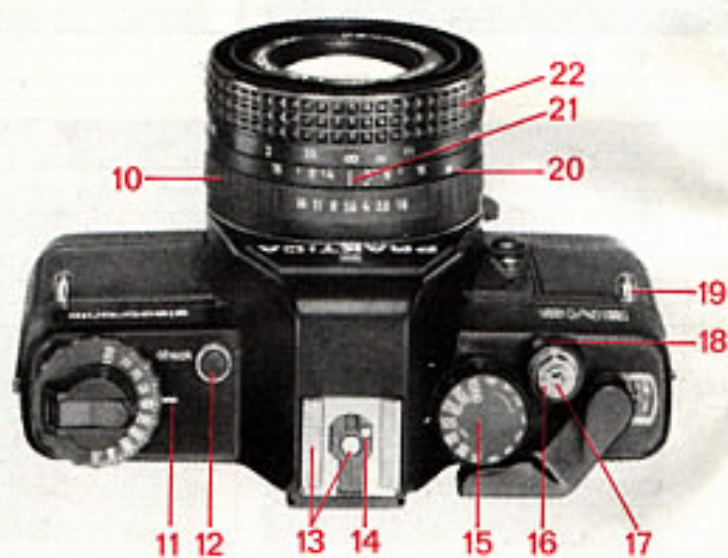
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11



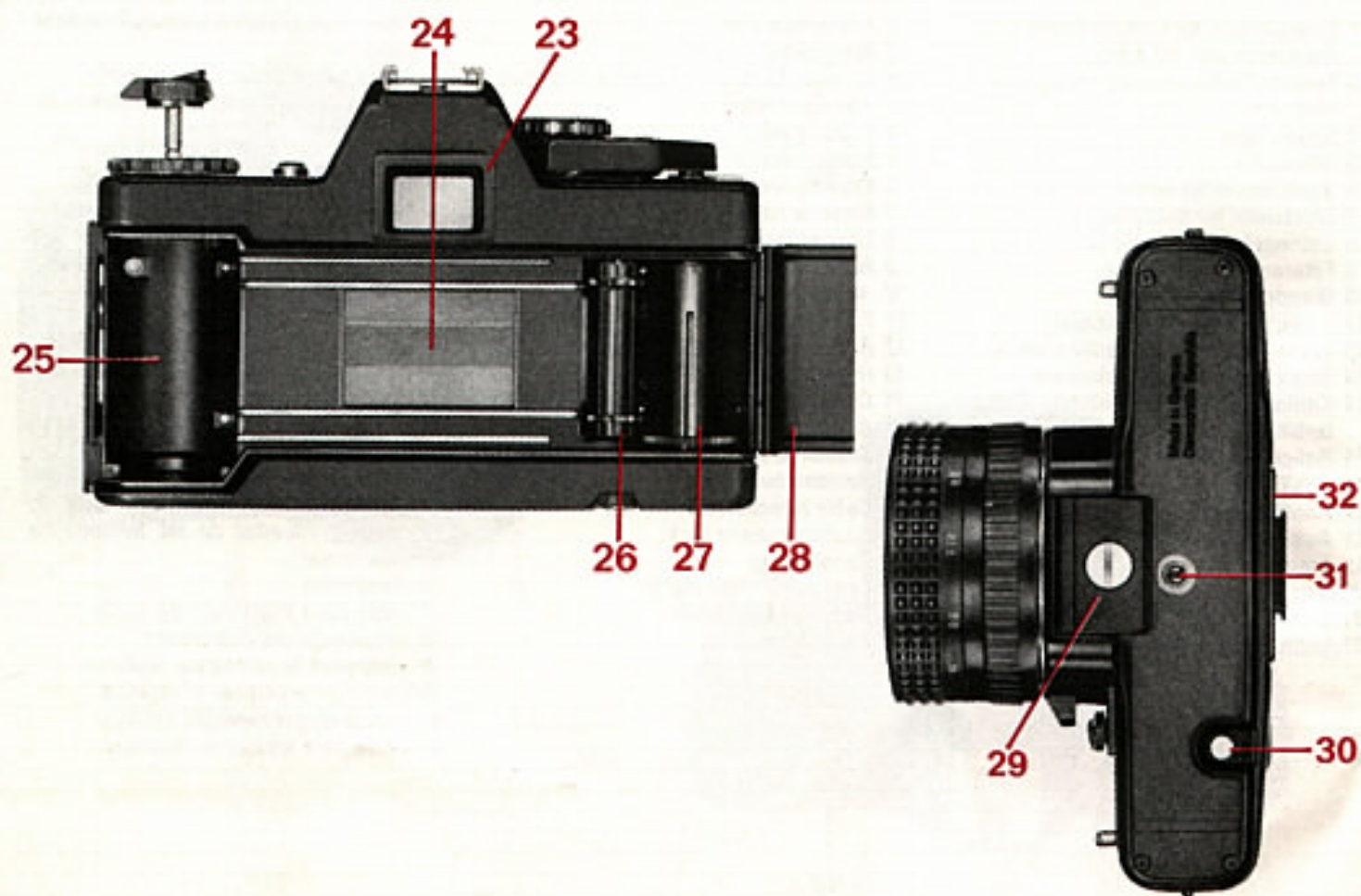
12



- 1 Einstellknopf für Filmempfindlichkeit
- 2 Rückspulknopf mit Kurbel
- 3 Fenster für Blendenwerteinspiegelung
- 4 Spannhebel
- 5 Bildzähler
- 6 Spannhebel für Selbstauslöser
- 7 Startknopf für Selbstauslöser
- 8 Entriegelungstaste für Objektiv
- 9 Filteranschlußgewinde
- 10 Blendeneinstellring
- 11 Index für Filmempfindlichkeit
- 12 Taste für Batteriekontrolle (check)
- 13 Steckschuh mit Mitttenkontakt
- 14 Kontakt für systemkonforme Computerblitzgeräte
- 15 Belichtungszeiten-Einstellknopf
- 16 Auslöser
- 17 Anschluß für Drahtauslöser
- 18 Auslöserverriegelung
- 19 Trageöse
- 20 Einsetzmarkierung am Objektiv
- 21 Schärfentiefskala
- 22 Entfernungseinstellung

- 1 Film speed dial
- 2 Rewind button with crank
- 3 Window for aperture setting reflection into viewfinder
- 4 Cocking lever
- 5 Frame counter
- 6 Cocking lever for self-timer
- 7 Release button for self-timer
- 8 Lens unlocking key
- 9 Filter thread
- 10 Aperture setting ring
- 11 Film speed index
- 12 Battery check button
- 13 Hot shoe with centre contact
- 14 Contact for dedicated computerised flash units
- 15 Shutter speed dial
- 16 Release button
- 17 Cable release socket
- 18 Shutter release lock
- 19 Carrying lug
- 20 Lens positioning mark
- 21 Depth-of-field scale
- 22 Focusing ring

- 1 botón para ajustar la sensibilidad de la película
- 2 botón rebobinador con manivela
- 3 ventanilla para reflejar el número de diafragma
- 4 armador de palanca
- 5 contador de impresiones
- 6 palanca de armar el autodisparador
- 7 disparador del autodisparador
- 8 pulsador desenchavador del objetivo
- 9 rosca para filtros
- 10 anillo para ajustar el diafragma
- 11 índice de la sensibilidad de la película
- 12 pulsador para ensayar la batería (check)
- 13 zapata de enchufe con contacto central
- 14 contacto para aparato de flash computerizado compatible con el sistema
- 15 botón graduador de los tiempos de exposición
- 16 disparador
- 17 unión para disparador de cable
- 18 enchavador del disparador
- 19 ojete para la correa portacámara
- 20 marca para colocar el objetivo
- 21 escala de profundidad del foco
- 22 anillo para ajustar la distancia



23 Okularfassung mit Zubehörwechsel-
stelle
24 Verschluß
25 Patronenraum
26 Filmtransportrolle
27 Filmaufwickelspule
28 Kamerarückwand
29 Deckel für Batterieraum mit Verriegelungs-
knopf
30 Rückspulauslöser
31 Stativgewinde
32 Steckrahmen (Memohalter)

23 Eyepiece with accessory holder
24 Shutter
25 Film cartridge space
26 Film sprocket
27 Take-up spool
28 Camera back
29 Battery compartment lid with locking
button
30 Rewind release button
31 Tripod socket
32 Plug-in frame (memo holder)

23 montura del ocular con montura para
accesorios
24 obturador
25 compartimiento del cartucho
26 rodillo transportador de la película
27 carrete enrollador de la película
28 tapa posterior de la cámara
29 tapa del compartimiento de la batería
con botón enclavador
30 desenclavador para rebobinar
31 rosca para trípode
32 marco de enchufe (portaapuntos)

PRAKTICA BM

Diese Bedienungsanleitung ist auch für die PRAKTICA BM zutreffend. Lediglich die Informationen zum Selbstauslöser beziehen sich nur auf die PRAKTICA BMS.

PRAKTICA BM

These instructions refer also to the PRAKTICA BM. Only the information given for the self-timer is only applicable to the PRAKTICA BMS.

PRAKTICA BM

El presente manual de instrucciones también vale para la PRAKTICA BM. Sin embargo, todo lo que se dice concierne al autodisparador se refiere exclusivamente a la PRAKTICA BMS.

Belichtungszeit (s) bei Blendenzahl
 Shutter speed range (s) at aperture
 Tiempo de exposición (seg.) a número de diafragma

ISO	EV	1,4	2	2,8	4	5,6	8	11	16	22
12	-1...	4...	4...	4...	4...	4...	4...	4...	4...	4...
	14	1/1000	1/1000	1/1000	1/1000	1/500	1/250	1/125	1/60	1/30
25	-1...	4...	4...	4...	4...	4...	4...	4...	4...	4...
	15	1/1000	1/1000	1/1000	1/1000	1/1000	1/500	1/250	1/125	1/60
50	-1...	4...	4...	4...	4...	4...	4...	4...	4...	4...
	16	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/500	1/250	1/125
100	0...	2...	4...	4...	4...	4...	4...	4...	4...	4...
	17	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/500	1/250
200	1...	1...	2...	4...	4...	4...	4...	4...	4...	4...
	18	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/500
400	2...	1/2...	1...	2...	4...	4...	4...	4...	4...	4...
	19	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000
800	3...	1/4...	1/2...	1...	2...	4...	4...	4...	4...	4...
	19	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000
1600	4...	1/8...	1/4...	1/2...	1...	2...	4...	4...	4...	4...
	19	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000
3200	5...	1/15...	1/8...	1/4...	1/2...	1...	2...	4...	4...	4...
	19	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000	1/1000

Technical features

- single-lens reflex camera, 24mm×36mm frame size, TTL light metering at full aperture through electronic aperture setting transfer.
- automatic shutter speed control from 1/1000s to 4s; aperture or shutter speed priority
- film speed range from ISO 12 to ISO 3200
- viewfinder information through LEDs in different colours
 - shutter speeds from 1/1000s to 4s
 - warning of overexposure and underexposure
 - flash readiness
 - battery check
- aperture setting reflected into viewfinder
- focusing system: Fresnel lens with diagonal triple wedge, microprism ring and ground glass ring

Viewfinder image shows 95% of picture sides – electronic flash synchronisation at 1/60s – PRAKTICA bayonet (flange focal length 44.4mm; inner diameter 48.5mm) – self-timer (approx. 8s) with release button – memo holder on camera back – power source: 6V primary battery – light receiver: silicon photocell – measuring and control range: 0... 17 EV at ISO 100 and aperture 1.4

– body dimensions: 138mm×87mm×49mm – weight (body without battery): BMS 480 g, BM 470 g.

Inserting the battery

A 6V battery powers the whole electronic system. Suitable are alkali-manganese, silver oxide and lithium batteries. Four button cells (e.g. LR 44) inserted in a sleeve (identification no. 961363) can also be used.

Normally, a fresh battery will last for about 2 years. To insert the battery, turn the locking button of the battery compartment lid (29) counter-clockwise until the lid can be opened. Clean the contacts in the compartment and the battery poles using a dry cloth. Press the plus pole of the

battery against the resilient contact (see the polarity marks on the inner side of the lid) and tip the battery in (Figure 1). Close the lid and lock it. It is recommended to check the contact points of the battery and compartment from time to time and clean them, if necessary. The battery is sensitive to low temperatures and should be protected in a suitable manner. If the camera is not used for an extended period, take the battery out of the compartment.

Checking the battery

First press the release button (16) slightly and then button (12); see Figure 2. The battery is sufficiently charged if the LED indication is bright. The LEDs go out if the battery is spent. Check for about 1 second.

In the "B" setting the battery cannot be checked.

Opening the camera back

Pull the rewind button (2) up to unlock the camera back (Figure 3). Open the back fully – the frame counter resets to start position.

Loading the film

Place the film cartridge into the cartridge space (25). Push in the rewind button (2); turn it, if necessary.

Thread at least 1 cm of the film leader into the slit of the take-up spool (27). Then turn the knurled spool plate of the take-up spool towards the shutter until the sprocket teeth engage the perforations on both sides of the film (Figure 4).

Closing the camera back

Grip the back in the middle of the latch side and press it against the camera body until it clicks in.

Preparing for shooting

The cocking lever (4) can be swivelled a short way without initiating winding. This ready position is ideal for shooting fast sequences. Swing the cocking lever fully out, bring it back and release the shutter by pressing the release button (16). Repeat this as often as is required for the frame counter (5) to read "1".

Proper film transport can be checked by looking at the rewind button (2): it should turn when the cocking lever (4) is operated.

Setting the film speed

Lift the film speed dial (1) and turn it until the ISO/ASA film speed printed on the film pack (see the ISO/ASA and DIN film speed reference table below) faces the index (11); see Figure 5. As a memory aid, you may plug the torn-off flap of the film pack into the memo holder (32).

ISO/ASA and DIN film speed see table page 16

Working ranges

With TTL light metering at full aperture, the camera can cover the following shutter speed ranges for the various film speeds.

Table page 17

Setting the shutter speed

Turn the shutter speed dial (15) until the desired speed faces the index ("125" in Figure 6). The LED next to "125" will flash when the release button is slightly pressed.

- | | |
|-------------------------|--|
| 4s to 1/15s | – for shots where the object brightness is low, a tripod is needed |
| 1/30s to 1/1000s | – for shots where the object brightness is sufficient |
| Symbol 60 $\frac{1}{2}$ | – for shots with an electronic flash gun (time is mechanically formed, also without a battery) |

Setting the aperture

Turn the aperture setting ring (10) until the desired aperture matches the index mark on the lens mount (Figure 7). The aperture setting is reflected into the lower part of the viewfinder.

Recommended apertures for a film speed of ISO 80:

	Aperture
Full sunlight	8... 11
Overcast	4... 5.6
Close-ups	not less than 8

The aperture can also be preselected on the basis of the depth of field desired for the subject, taking into account the shutter speed information in the finder so as to avoid blurring. A small aperture means a great depth of field, whereas a large aperture gives a shallow depth.

Focusing

Focusing is possible with the triple wedge, microprism ring and ground glass ring (Figure 8).

A Triple wedge

The triple wedge system allows highly accurate focusing. Optimum sharpness is obtained when contours and lines flow naturally. The object focused on is out of focus when the contours of the centre wedge are out of alignment.

B Microprism ring

The subject is in proper focus when the image in this field is clear and does not flicker.

C Ground glass ring

This focusing ring is of advantage in photomacrography and photomicrography, but also when the lens used has a small relative aperture (f-numbers greater than 4). The image in the ring shall be clear and sharp.

Infrared shots

Infrared shots call for a slight correction of the distance setting: after focusing in the normal way, match the distance so determined with the infrared index on the lens barrel.

The arrow in Figure 7 points to the infrared index.

Semi-automatic mode

There are two possibilities:

1. Shutter speed is preselected, aperture is adapted (preferable with good lighting conditions and normal shots)
2. Aperture is preselected, shutter speed is adapted (favourable with poor lighting conditions when a certain depth of field is required)

Depth-of-field indication

The depth-of-field limits for the aperture set can be read from the depth-of-field scale (21) on the lens (Figure 7).

Example: distance 3m, aperture 8 – depth of field stretches from about 2m to 5m.

Shutter speed is preselected

Set the desired time by turning the shutter speed dial (15). Press the release button (16) halfway down to switch on the camera electronics. Check the shutter speed by means of the finder LEDs.

While the LED pertinent to the preselected shutter speed flashes, another LED, which shines permanently, indicates the shutter speed required for the available lighting conditions, film speed and aperture. Two LEDs may light in the case of intermediate values. To set the camera for correct exposure, turn the aperture setting ring (10) until the flashing LED is permanently on. The aperture so set can be seen at the lower edge of the viewfinder.

Aperture is preselected

Set the desired aperture by turning the aperture setting ring (10). Switch on the electronic system by pressing the release button (16) halfway down. The shutter speed indication will be as described above, i.e. the LED for the shutter speed set will flash, whereas the shutter speed actually needed for a correct exposure is indicated by a permanently lit LED. Turn the shutter speed dial until the flashing LED moves toward the permanently lit one, and finally coincides with the latter.

There is no LED display in the "B" setting. The flash synchronisation time is mechanically formed, making it possible to photograph at 1/60s, or $\frac{1}{2}$. All the other shutter speeds, inclusive of "B", are electronically formed.

If the 1/1000s to 4s shutter speed range is exceeded in any one direction, LED signals are given. Overexposure is indicated by the OVER LED flashing, underexposure by the UNDER LED flashing or by two LEDs shining permanently.

Release button

To facilitate operation, several functions have been built into the release button (16). Pressing it slightly down until resistance is felt switches on the electronics and the shutter speed/flash readiness LEDs (the latter when computerised flash guns are used).

After making the required exposure settings and cocking the shutter pressing the release button further down causes the shutter to fire. Letting go of the button switches the electronics off. Relieving the pressure from the release button during long exposure times has no effect on the exposure; the electronics will not switch off until the shutter has completed its operation.

Locking the release button

The release button lock (8) is used to prevent unintentional shutter release and unnecessary power consumption which would occur when the release button is inadvertently pressed, no matter if the shutter is cocked or not. Just turn the lock clockwise to arrest the release button (Figure 9). Unlock by turning it counterclockwise. Attention! Do not lock the button when it is pressed down.

Self-timer

Cock the shutter and swing the cocking lever for the self-timer (6) down as far as it will go. Press the release button (7) of the self-timer (Figure 10). The shutter will fire after a delay of about 8s. Attention! Do not cock the shutter while the self-timer mechanism is running.

Flash photography

If the available light is insufficient, for example, to take indoor shots, a flash unit is recommended to be used. All electronic flash units can be plugged on, computerised or not, if they fit on this camera model.

Just plug the flash unit into the hot shoe (13) to connect it to the camera.

Set the shutter speed dial (15) to "60 $\frac{1}{2}$ ". When the release button (16) is slightly pressed, the LED next to "60" will flash. At the same time, the shutter speed is indicated.

When attaching simple electronic flash guns, use the guide number to determine the aperture or distance.

In addition to the shutter speed information, flash readiness of camera and flash unit is indicated when a dedicated computerised flash gun is plugged on. A green LED will light next to the flash symbol in the finder, also in the "B" setting.

Changing the film

After shutter operation the frame counter (5) shows the number of frames exposed. When the maximum number of frames on the film (red markings at 20 and 36) are exposed, the film must be changed.

Press in the rewind release button (30), fold out the rewind crank (2) and turn it not too fast in the direction of the arrow, i. e. clockwise (Figure 11) until increased resistance followed by easy turning is felt, which indicates that the film has slipped out of the take-up spool. Then pull the rewind button up to unlock the camera back, and take the film cartridge out. Do not change the film in full sunlight.

If more frames have been exposed than are printed on the film pack, it may happen that the cocking lever cannot be swung fully out. Do not use force in this case but rewind the film as described above.

Changing the lens

Press the unlocking key (8), turn the lens counter-clockwise and take it out of the body (Figure 12). Insert the PRAKTICAR lens so that the red marks (8/20) on camera and lens match. Then press the lens against the camera body and turn it clockwise until it clicks in.

All original PRAKTICA lenses with the M 42×1 screw-in thread can be attached to this model by means of the PRAKTICA adapter. With the exception of the light measurement, which is made at working aperture, there are no restrictions in camera operation when a screw-in lens is used.

Care of the camera

- *Protect the camera from blows, knocks, dust and moisture.*
- *Clean the cartridge and spool space, film track and camera back from time to time using a soft brush.*
- *Do not use organic solvents like spirit or varnish thinner for cleaning the camera.*
- *Keep aggressive vapours away from camera and lens.*
- *Remove any finger prints from the lens and eyepiece surfaces with lens cleaning tissue.*
- *Do not touch the mirror, field lens or shutter curtains with your fingers as the resulting contamination can only be removed by a service workshop.*
- *Use an optician's (soft) brush to remove dust, or blow it off with a rubber ball.*
- *Do not subject the camera to very high or low temperatures. For example, avoid putting it on the hat rest of a car in full sunlight. The camera, and especially the batteries, should be protected in a suitable way against deep temperatures.*
- *When using the camera near the sea or on the beach, protect it against salt water, mist and sand.*

- *Avoid subjecting the camera to sudden temperature changes as these may lead to water condensation and, consequently, corrosion.*
- *In case of defects, do not try to repair the camera yourself but call on a service workshop.*

Please follow the above instructions. Improper use of the camera may lead to defects which are not covered by our guarantee.

Further development of the PRAKTICA BMS may result in minor deviations from the details contained herein.

The image shows the front cover of a vintage brochure for the Topcon RE Super camera. The cover is made of aged, cream-colored paper. A large, tilted black diamond shape is the central focus. Inside this diamond, the text 'TOPCON' is at the top in a bold, italicized sans-serif font. Below it, 'RE' is in a large, outlined, blocky font, followed by 'SUPER' in a smaller, bold sans-serif font. At the bottom of the diamond, the text 'WITH THRU-THE-LENS MIRROR-METER' is written in a clean, sans-serif font. The diamond is framed by a border of alternating blue and light blue geometric shapes, creating a dynamic, abstract design.

TOPCON
RE SUPER

WITH
THRU-THE-LENS
MIRROR-METER

MAIN FEATURES OF THE TOPCON RE SUPER

Standard Lens :

RE. Auto-Topcor f/1.4 58mm 7 element lens. Exakta type modified bayonet mount. Fully automatic instant opening lens diaphragm internally coupled to built-in exposure meter. RE. Auto-Topcor f/1.8 58mm 6 element lens is also available.

Shutter :

Focal plane shutter, with non-rotating single axle shutter speed dial. Eleven equal distant shutter speed settings 1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500, and 1/1000 sec. plus Bulb ; internally coupled to built-in exposure meter.

Finder :

Eye-level Pentaprism finder, with detachable large-size eyepiece frame and rubber eyecup. Eyepiece frame exchangeable with correction lens. Finder interchangeable with accessory waist-level finder, having full-area magnifier.

Focusing Screen :

True ground glass over full area is boosted by fresnel lens for overall brightness ; has split-image rangefinder spot surrounded by fine focus ring. Center of finder is aligned exactly with center of film frame. Standard screen is interchangeable with accessory focusing screens.

Direct Flash Contact:

Exclusive bayonet mount non-cord flash unit connects directly with flash circuit by simply mounting over the rewind knob outside bayonet mount.

Speed-Lever:

180 degrees single stroke, or multi-strokes up to 180 degrees, advances films, charges shutter and mirror raising mechanism, as well as advancing exposure counter.

Exposure Counter:

Additive exposure counter automatically returns to start-mark upon opening camera back.

Film Rewinding:

Fold-down rewind crank flips open and floats up for fastest rewinding action; turn-stop rewind button automatically pops up with speed-lever action.

Self-Timer:

Adjustable for 5 to 10 seconds delayed action; exclusive release button.

Film Indicator:

Twenty click-stopping film speeds ASA 10 to 800 (or DIN 11 to 30).

Film Loading:

Hinged camera back locks tight on safety catch when closed strongly. Opens when safety lock is push-turned. Detaches for attachment of special 35 ft. film magazine.

Depth of Field Preview:

Push-release lever stops lens diaphragm down for previewing of actual depth of field on true ground glass—with standard focusing screen.

Mirror Action:

Positive stopping instant return mirror action, coupled with shutter and lens diaphragm actions.

Exposure Meter:

Cadmium Sulphide exposure meter is attached behind (and is an integral part of) the reflex mirror. Narrow 0.05mm (0.002") slits cut in mirror surface permit 7% light transmission to meter, without darkening or obstructing focusing screen view. Gives average reading for whole subject area seen in focusing screen. Internally coupled to both shutter speed and lens diaphragm (of all TOPCOR lenses). Match-point indicator below focusing screen and also on camera top deck. Covers range of EV 2 to EV 16, with ASA 100 film and f/1.4 lens. Works on miniature 1.3 volt mercury battery.

Flash Synchronization:

Automatic internal peak compensating flash synchronization, with single flash socket for all flash bulbs and electronic flash units. Color-coded shutter dial for simplified flash illumination: all flash bulbs synch on black numerals, electronic flash synchs on red and black speeds while green figures are for FP and special bulbs. Built-in accidental flash prevention double contact system.

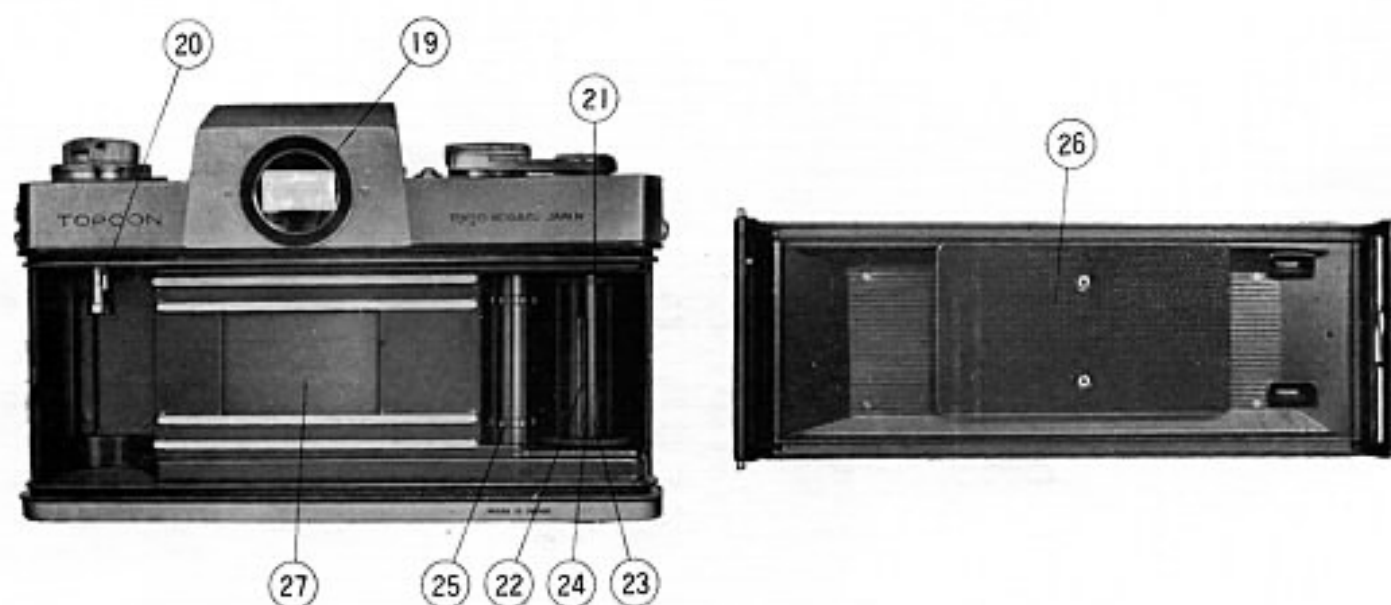


NOMENCLATURE

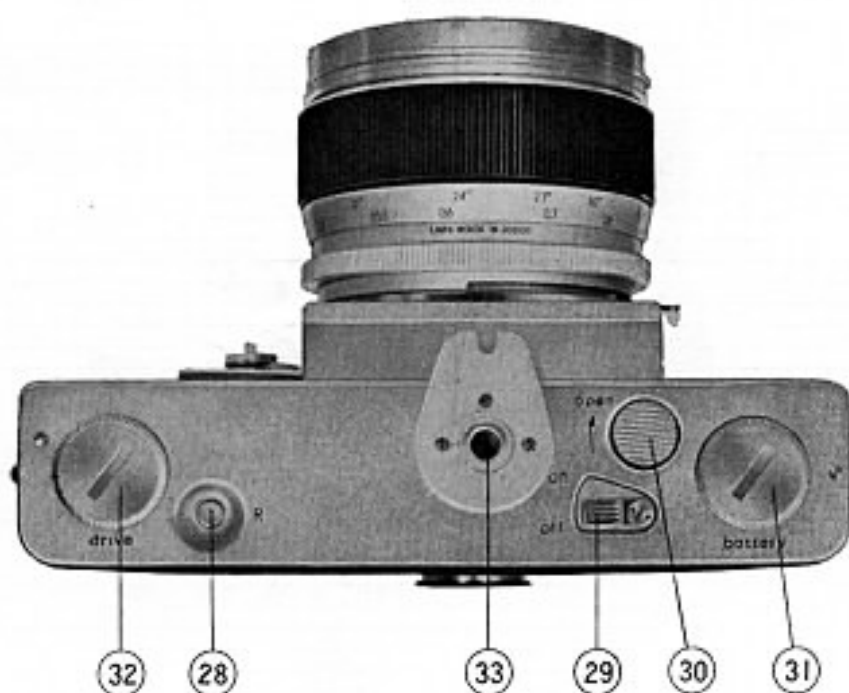
- ① Film winding speed-lever
- ② Exposure counter
- ③ Exposure counter index

- ④ Film speed indicator
- ⑤ Shutter speed scale
- ⑥ Film speed adjusting ring

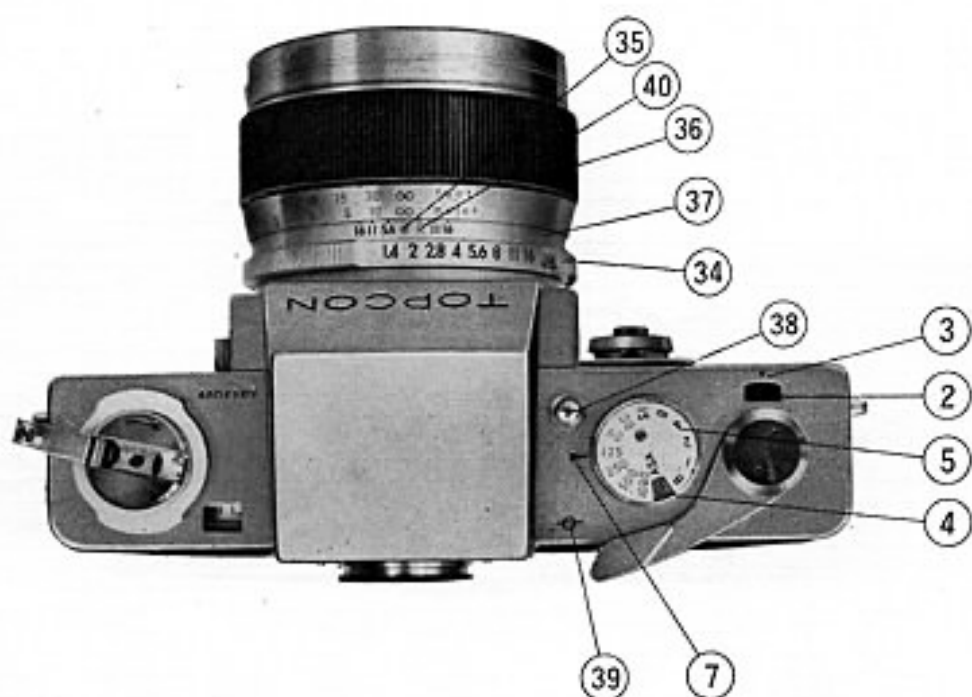
- ⑦ Shutter speed index
- ⑧ Rapid rewind crank
- ⑨ Flash unit bayonet mount



- | | | |
|--------------------------------|-----------------------------|-------------------------|
| ⑩ Flash socket | ⑥ Shutter release button | ⑮ Shoulder strap lug |
| ⑪ Pentaprism finder | ⑦ Self-timer | ⑯ Finder eyepiece frame |
| ⑫ Exposure indicator window | ⑧ Self-timer release button | ⑰ Film cartridge shaft |
| ⑬ Depth of field preview lever | ⑨ Lens locking lever | ⑱ Film take-up spool |



- | | | |
|---------------------------------------|--------------------------------|------------------------------|
| ②② Film take-up spool slit | ②⑦ Film transport sprocket | ②⑩ Battery control switch |
| ②③ Film take-up spool screw-head | ②⑧ Film pressure plate | ②⑪ Back cover lock |
| ②④ Film take-up spool serrated flange | ②⑨ Focal plane shutter curtain | ②⑫ Battery compartment cover |
| | ②⑥ Rewind button | ②⑬ Motor drive shaft cover |



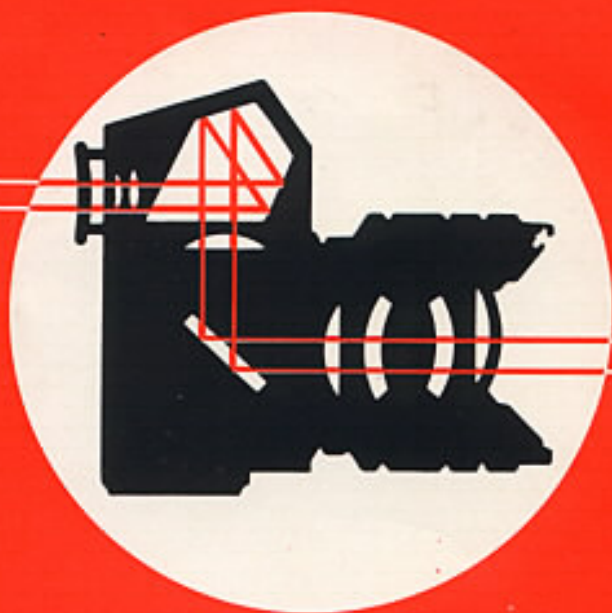
- ③ Tripod socket
- ④ Aperture ring
- ⑤ Distance/aperture index

- ⑥ Distance focusing ring
- ⑦ Depth of field scale
- ⑧ Finder catch

- ⑨ Film plane indicator
- ⑩ Infrared index

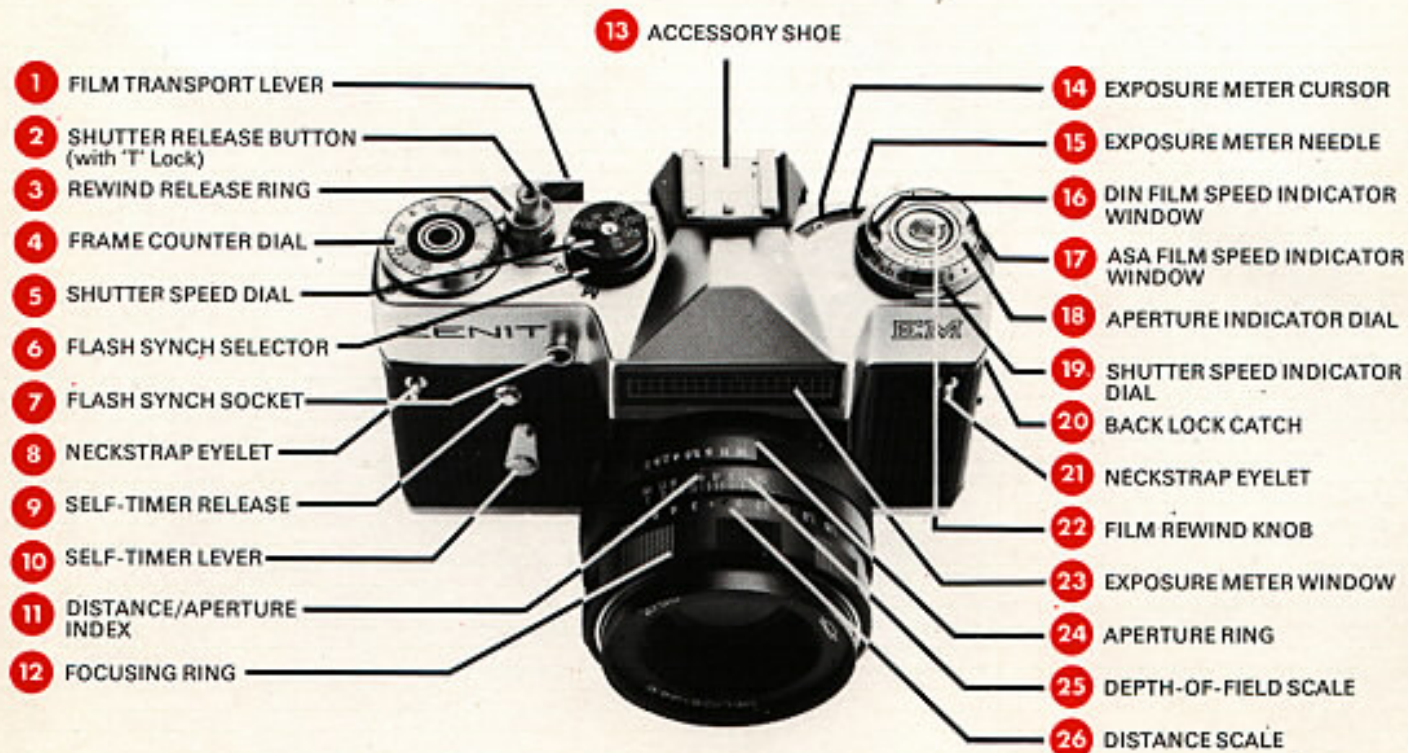
Zenith

OWNER'S HANDBOOK



Operating controls

see p.15 for Helios 44 and Industar 50 lenses



Operating controls

Shutter release and 'T' lock button

Synchronisation lever index

Index for shutter speed selector

Shutter speed selector

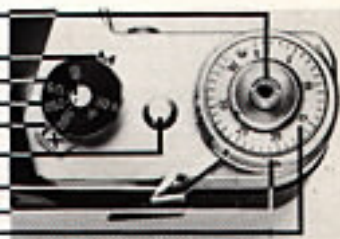
Synchronisation setting lever

Film rewind release button

Film transport lever

Frame counter dial index

Frame counter dial with guide



Zenith E and B controls

27 FILM CASSETTE CHAMBER

28 FILM CASSETTE SPINDLE

29 FOCAL PLANE SHUTTER

30 VIEWFINDER EYEPiece

31 PRESCRIPTION LENS RETAINING RING

32 FILM SPROCKET WHEEL

33 FRAME COUNTER INDEX
(at rear of dial, 4)

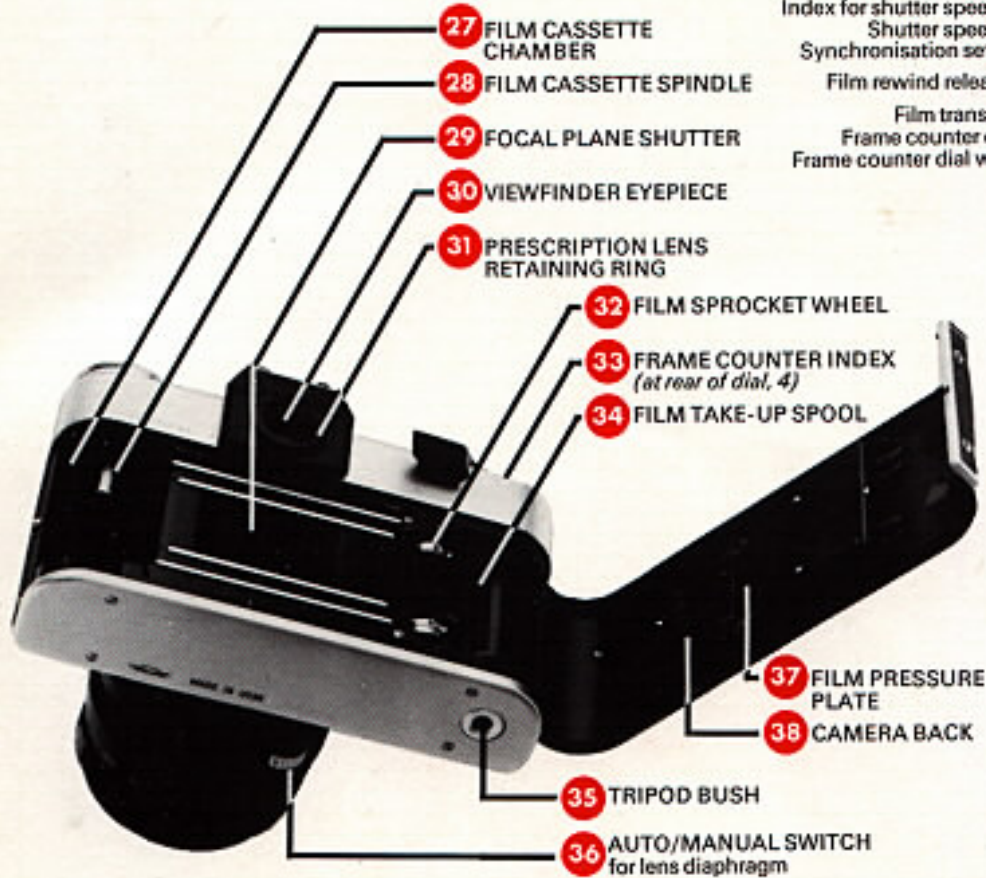
34 FILM TAKE-UP SPOOL

37 FILM PRESSURE PLATE

38 CAMERA BACK

35 TRIPOD BUSH

36 AUTO/MANUAL SWITCH
for lens diaphragm



To get the best possible results from your Zenith, study this book *thoroughly* to make sure that you are familiar with the essential features of the camera before you start taking pictures. Refer back to the book any time there is something you are not sure of. Many operational features of this camera are unique and probably somewhat different from other cameras you may have owned. It is therefore strongly recommended that after carefully reading the instructions you shoot a 'test' roll of film, have this film processed, and examine the pictures before exposing additional rolls. This test roll will verify that you are using your new camera correctly and allow you to make any necessary changes in camera operation. Additionally, it will confirm that all the camera controls are functioning perfectly.

N.B. A policy of continual product development means that there may be minor differences in design or specification between your camera and these instructions.

Contents

Specification	p 1
Loading your camera	p 3
Picture-taking technique	p 7
Using your camera's built-in meter	p 8
Exposure hints	p 10
Setting camera and lens controls	p 12
Choosing shutter speeds and apertures	p 16
Viewing and focusing	p 18
Depth of field	p 20
Taking the picture	p 23
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Introduction

This handbook is primarily written and illustrated around the latest SLR camera from the USSR – the Zenith EM. Though this camera boasts many advanced features over its predecessors, the Zenith E and its earlier meterless version the Zenith B, the basic instructions may be applied equally well to all models. Where any differences occur between models these have been noted, and inset illustrations provided, if necessary, in the appropriate section of the book. Though many hints and tips towards better photography have been included, this handbook should in no way be thought of as a comprehensive guide to general photographic techniques. There are numerous useful books of this type available and if you are just taking your first shaky steps in photography it would

certainly benefit you to consult your local library or bookshop.

Your Zenith camera is sturdily built and will work happily under widely varying conditions. Do remember, though, that it is a precision-built optical instrument and should therefore be handled carefully and protected from violent shocks, damp, dust and sand and sudden changes of temperature. Take care of your camera and it will give you years of reliable service and brilliant pictures. The wide range of accessories available, particularly those from the USSR which offer outstanding value-for-money, enable you to cope with almost any photographic situation. You can build up as complete a system as you need at your own pace.

The illustration/description of equipment and accessories throughout this book is for information only and should by no means be considered an offer of sale.

Specification

Format	24 × 36mm; using standard 35mm cassettes of 12, 20 or 36 exposure, colour or black and white film.
Shutter	Horizontal travelling Focal Plane type, speeded 1/30, 1/60, 1/125, 1/250 and 1/500th second plus B (brief time). Linked to self-timer giving approximately 7 seconds delay.
Flash synchronisation	Switch control for bulb & electronic synchronisation at 1/30th sec. through a standard 3mm co-axial socket.
Viewing/Focusing system	Eye-level pentaprism/instant return mirror shows upright laterally correct image. Bright Fresnel focusing screen with central ground glass/micropism spot on Zenith EM. Plain fine ground screen on E & B models.
Exposure meter	Built-in selenium cell with match-needle shutter/aperture read-out. Calibrated for: Film speeds 25–500 ASA/13–28 DIN, apertures f/2–f/32, shutter speeds 1/500th sec. to 30 seconds.
Frame counter	Additive 0–36 manual resetting type.

continued...

Standard Lens	<i>Helios 44m ("EM")</i>	<i>Helios 44 (E & B)</i>	<i>Industar 50 (E & B)</i>
Construction	6 elements in 4 groups	6 elements in 4 groups	4 elements in 3 groups
Focal length	58mm	58mm	50mm
Diaphragm type	Fully automatic instant re-open-optional manual over-ride	Manual Pre-set	Manual
Aperture range	f/2–f/16 with click stops at full and half apertures	f/2–f/16 with click stops at full apertures	f/3.5–f/16 (no click stops)
Distance scale	0.55m–Infinity	0.5m–Infinity	0.65m–Infinity
Angle of view	40°	40°	45°
Filter size	52mm screw 54mm push-on	49mm screw 51mm push on	33/35mm screw 36/37mm push on
Lens mount	'Universal' (42mm) thread accepts standard single pin automatic lenses and accessories	'Universal' (42mm) thread accepts standard non-automatic lenses and accessories (Some early E & B models fitted with 39mm mount)	

Loading your camera

Precautions

(a) Your Zenith camera accepts any standard 35mm cassette, of colour or black and white film.

(b) Always load the film in subdued lighting conditions. If outdoors look for a shady area or shield the camera from direct sunlight with your body or coat.

(c) Whenever possible avoid loading in a dusty place or at the seaside where strong salty wind is blowing.

(d) When loading take care not to touch the shutter blinds.

(e) Make sure Shutter Release has *not* been set in the 'T (or Time) Lock' position. (See p. 13).

Procedure

1. Raise the Back Lock-catch [20] and swing the Camera Back [38] open.
2. Before loading ensure rewind release mechanism has been cleared. With the EM camera

the Rewind Release Ring [3] must be turned clockwise so that the three dots are fully lined up.

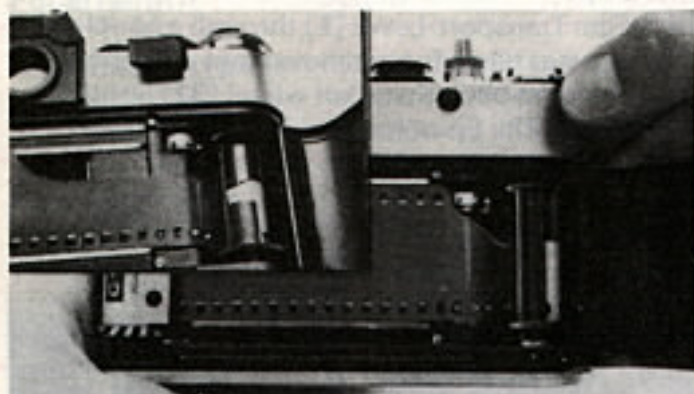
Turn Film Transport Lever [1] through a couple of short strokes till no further movement is possible while holding back Sprocket wheel [32] lightly with finger. The Sprocket should rotate in time with the lever action and not 'free-wheel'.



3. Push up the Cassette Retaining Spindle [28] from inside the camera. Place the cassette into its chamber [27] ensuring that the cassette's projecting end faces down. Push Rewind Knob

[22] back to its original position to hold the cassette in place – you may need to turn it clockwise a little until it seats properly in the cassette spool.

4. Draw out from the cassette enough film (about 3") to insert the leader into the Take-up Spool [34].



(inset: Zenith E & B)

With the EM camera the leader can be inserted into any one of the spool's slots – with E & B cameras fix the film's leading edge under the Take-up Spool spring (turn the bottom knurled flange with finger to get this uppermost). With all models ensure that one perforation hole is caught by the Take-up Spool

tooth, also see that the Sprocket wheel [32] engages in a perforation.

5. Make sure film cassette lies flat, then alternately depress Shutter Release Button [2] and turn Film Transport Lever [1] until perforations on both sides of film are engaged by the Sprocket Wheel [32]. The film should also be taut around the Take-up Spool – turn bottom spool-flange with finger towards cassette position to take up any slackness.

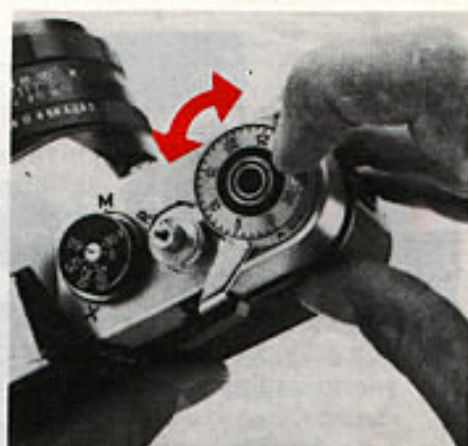
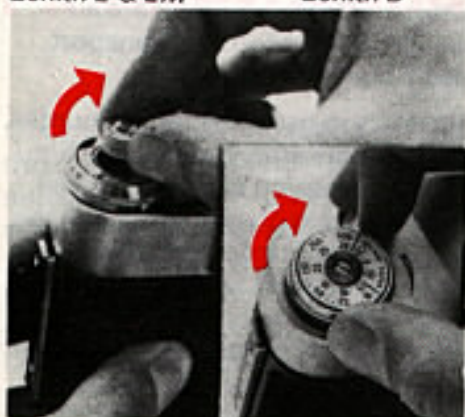
Note – Film is advanced by sprocket drive, so it is most important for sprockets to engage film perforations properly.

6. Complete film wind, if necessary, to its limit. Press Shutter Release Button [2] then close the Camera Back [38]. Firm pressure only required on the Zenith EM as the back has a self-locking catch. With E & B models this catch [20] must be returned manually to the locking (downward) position.

7. Take up any slackness of film within the cassette (especially important with shorter than 36 exposure lengths) by slowly turning Rewind Knob [22] clockwise till slight resistance is felt. On the Zenith B the Rewind Knob is ready to hand. On the Zenith E & EM cameras, the Rewind Knob is spring-loaded and recessed within the exposure meter controls.

Zenith E & EM

Zenith B



To bring the knob into rewind position press it down firmly, twisting it slightly anti-clockwise at the same time – to re-lock the knob press down fully whilst twisting it clockwise.

8. Move Film Transport Lever (2) through two or more short strokes (letting it return to the starting position after each stroke) until no further movement is possible, watching to see if the Film Rewind Knob [22] turns while doing so. If the Rewind Knob turns it shows that the film is correctly loaded and moving properly through the camera. If it doesn't turn, and you have taken up the slack as described in step 7, then the film may not be securely

attached to the Take-up spool or properly engaged by the Sprocket Wheels.

9. Now turn Frame Counter Dial [4] until the number '0' shows against the Frame Counter Index [33] and press the Shutter Release [2] once more.

If you are not going to take photographs immediately do not wind on the film at this stage since it is always best to leave the shutter in the fired position, just in case the camera is put away without being used for some time.



10. If you are ready to take photographs, wind Film Transport Lever [1] fully . . . and your first film frame is in position, as shown by the Frame Counter Index [33].

Notes

(a) Always make sure the Transport Lever [1] has been *fully* wound. This is easiest when you move this lever in *two* short strokes. When the lever stops

during the second stroke, you are assured that the camera's film, shutter and frame-counter are all ready for exposure. Failure to wind the Transport Lever fully may result in a 'blank' exposure.

(b) To maintain accuracy in use, the Frame Counter Dial [4] *must* be zeroed only *after* winding the film/shutter. After this, every time you wind on the dial will come to rest with the next division opposite the Counter Index [33]. The counter tells you how many frames (pictures) you have taken and when it reaches 12, 20 or 36 (depending on film in use), you will need to rewind the film into its cassette and put in a new film. Colour film especially should not be left in the camera for long periods and for the best results should be processed as soon as possible after exposure. Incidentally *do* carry a spare film – nothing is more annoying than to run out of film just before the best shot turns up!

(c) The disc on the rewind knob of Zenith B models is there simply to remind you of the speed or type of film you are using – it has no effect on the camera mechanism whatsoever. To set the reminder disc hold the rewind knob, then apply finger or thumb pressure to the disc and turn it until the film speed or type lines up with the red mark.

Picture-taking technique

Once the camera is loaded you have to consider three aspects of taking a picture – exposure, focus and composition. The first two of these are purely technical; the following sections, together with a little experience, will soon enable you to handle your Zenith with sufficient enough ease to leave you free to concentrate on the third aspect, composition, which is the artistic one.

Exposure

Though sometimes thought to be photography's biggest problem, obtaining correct exposure is not really so difficult thanks to the latitude of modern-day films. There are three governing factors: sensitivity to light of the film (usually expressed as an ASA speed rating); shutter speed, which controls the amount of time the image is allowed to affect the film; and the lens aperture, which controls the brightness of the image falling on the film. There are two methods of obtaining the total amount of exposure required for a film of certain sensitivity under certain conditions of lighting. First is by using the exposure tables supplied with the pack of film you buy – these of course only hold

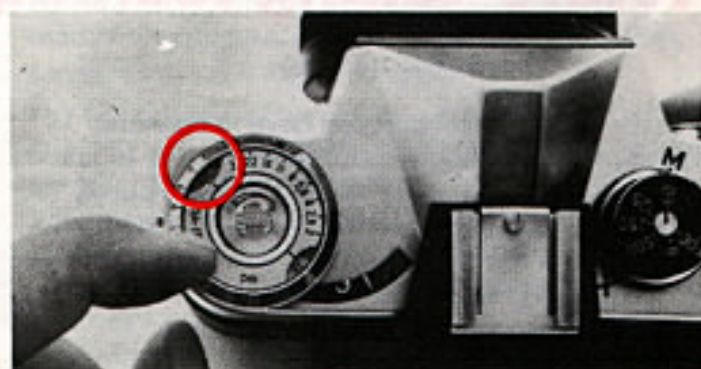
good under average subject and lighting conditions, but are usually a quite accurate guide and certainly more than adequate to begin with. A better and far more accurate method (especially important with colour slide films, as the slide is your final result) is to *measure* the brightness of a scene by means of an exposure meter. The Zenith B owner can probably work quite happily with the first method but if preferred can always purchase a separate hand-held exposure meter (our own excellent Leningrad 4, for example). For convenience and speed of use, Zenith EM and E models incorporate a sensitive built-in photoelectric meter [23] to help obtain correct exposure under widely varying conditions. No batteries are required since at its heart is a selenium cell that converts light reflected by your subject into electrical energy which directly activates the meter needle [15].

Whichever method is chosen it is recommended to use a minimum shutter speed of 1/125th second where possible, (certainly for the majority of outdoor subjects). This speed is fast enough to prevent most 'blur' due to camera or subject

movement, yet is slow enough to permit picture-taking in a wide variety of lighting conditions with today's sensitive films. If it's necessary to shoot at 1/60th or 1/30th second, hold the camera as steady as possible – ideally by using a tripod, or by bracing your arms on a nearby table or other support.

How to use your camera's built-in exposure meter

1. Set Film Speed – Beneath the Aperture Indicator Dial [18] are two scales of figures. One scale marked for films rated at 25, 50, 100, 200, 400 and 500 ASA registers in the ASA speed Indicator Window [17], and the other marked in DIN ratings of 13, 16, 19, 22, 25 and 28 registers in the DIN speed Indicator Window [16]. Turn the Aperture Indicator Dial until the speed number for your film shows against the index mark in the appropriate window. Should your film be rated at an intermediate speed, simply position the ASA or DIN index mark between the next smaller and larger number (for example for a 64 or 80 ASA film set the ASA index mark between 50 and 100, for a 23 DIN film set the DIN index mark between 22 and 25). On some E and EM cameras there are dots between the marked numbers indicating these



intermediate film speeds, but in any event if you do as described your meter will operate well within the exposure tolerances (latitude) of most film types.

2. Aim Exposure Meter [23] at your subject – see last paragraph on page 10.

(For a practise reading aim the meter at a brightly lit scene, or, if indoors, at a nearby lamp – making sure your fingers do not obstruct the meter window). As you do so you will note the Exposure Meter Needle [15] moves to a certain position and then stops. Holding your camera in this position you now ...

(see 'Time Exposure', p. 12) when so indicated by the exposure meter reading (See 'In extremely dim light' following).

Helpful hints for better exposure

Remember that your exposure meter measures all the light that reaches its cell and 'averages out' the brightness or contrast range before giving a reading. With subjects of average contrast (e.g. scenes lit from the front, or at an angle from the side, where there are no heavy shadows and dark and bright areas are fairly balanced) the right amount of exposure is indicated automatically. However, to obtain the best results with subjects of widely varying brightness range it is wise to take a few precautions.

● If your main subject is much lighter than the background (e.g. a portrait of an illuminated face against a darkened doorway, arch or foliage) or ... if it is much darker than the background (e.g. a person, boat or chalet set against a seascape or mountain scene directly lit by the sun) move right up to your main subject until it fills the viewfinder, and take a close-up reading with the exposure meter. Set the appropriate exposure combination

found from this reading on your camera and lens controls before returning to the original viewpoint to take the picture.

● Take a substitute reading. Sometimes a close-up reading is not possible: if this is the case aim the exposure meter at an alternative subject of average contrast under the same lighting (the back of one's hand is a good example or ideally a sheet of neutral grey card). Again, use an appropriate combination from this reading on the camera and lens controls. Alternatively, close the lens aperture by 1 to 2 stops (f/no's) as compared with a straightforward meter reading of the former subject and open up the aperture by 1 to 2 stops to that indicated for the latter subject — this too will prove more correct in most circumstances of this nature.

● Always be careful to aim the exposure meter exactly in the direction of the subject. Inadvertent tilting of the camera, into the sky for example when taking landscape views, can falsify the reading and in this case lead to under-exposure. It is best to aim the meter *downwards* slightly when taking landscapes and similar outdoor pictures to avoid adverse influence on the reading from the bright light of the sky.

3. Match the Needle [15] so that it is centred beneath the Meter Cursor [14] by turning the Shutter Speed Indicator Dial [19].



4. Your Light Measurement or Reading has now been taken. Each combination of lens opening (f/number) and shutter speed shown on the Aperture Indicator Dial [18] and Shutter Speed Indicator Dial [19] will give the right amount of exposure. For example in the illustration shown, these scales show that correct exposure will be obtained with a shutter speed of 1/125th of a second and at a lens opening of f/8 or a speed of 1/250th of a second and a lens opening of f/5.6 etc. The combination chosen will of course depend on the subject to be photographed (see p. 16) and the appropriate shutter speed and aperture should be set on the camera and the lens.

Note : Only the numbers appearing in *black* on the Shutter Speed Indicator Dial [19] can actually be set on the camera. The Red numbers 15, 8, 4 and 2, appearing next to the Black numbers 30–500, represent fractions of a second. '15' is 1/15th second, etc. These appear for information purposes only, say for when using your camera's meter to determine exposure with cameras lacking a built-in meter. The set of Red numbers 1, 2, 4, 8, 15 and 30 which are furthest from the Black numbers 30–500 on this Dial [19] show exposure time in whole seconds and can be used in certain circumstances



● Against the light, unless you're purposely striving after a silhouette effect, with your main subject very deep in shade against full highlight detail, then you must open the lens aperture by at least one stop to that indicated by an exposure meter reading.

● If using colour slide film, avoid subjects with great brightness differences. Even a close-up reading of the shadow areas often results in excessive exposure for the sunlit areas, which then appear too light and burnt out when the slide is projected. A straightforward average brightness reading under conditions of uniform frontal or side angled lighting yields slides of good colour saturation which correspond most closely to the natural colour impression.

● In extremely dim lighting, the Exposure Meter Needle [15] may rest near the right-hand edge of the transparent window. Should this occur, place your hand close in front of the Exposure Meter Window [23] and watch the needle carefully. If the needle moves when you block the meter cell the exposure meter is able to function in the existing light – remove your hand and determine exposure in the normal way. However, if no needle movement occurs when you place your hand in front of the meter cell the existing light is insufficient and the exposure meter cannot be used. In this event, either a time exposure or use of a flash gun is recommended.

Setting the camera and lens controls

Shutter Speeds

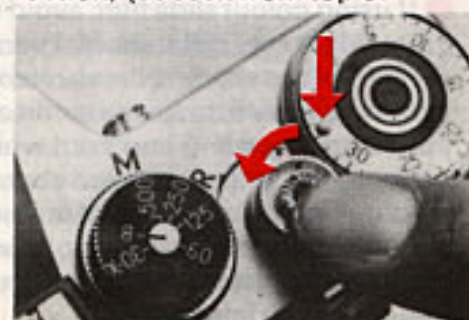
Lift the Shutter Speed Dial [5] and turn it until the required speed aligns with the index dot in the centre of the dial (see p.9). Release the dial, making sure it drops fully home and is correctly lined up, and the speed will be set. Shutter speeds may be selected before or after the Film Transport Lever [1] has been wound. However, the following points *must be observed* to avoid mechanical damage: (a) Always *lift* the Shutter Speed Dial before turning it to another speed and *lower* it *fully* before shooting; (b) Always turn the Shutter Speed Dial to one of the *marked* speeds (30, 60, etc, that indicate fractions of a second, or B, that indicates a hand-controlled time exposure) – NEVER to a position between marked speeds; and finally (c) DO NOT turn the Shutter Speed Dial the short distance between B and 500.

Long Exposure Times (Time Exposures)

Time exposures of one second duration or longer, enable you to take photographs in lighting conditions that would be too poor for normal picture-taking, e.g. city streets at night or dimly lit

interiors. To take a time exposure with your Zenith set the Shutter Speed Dial [5] to 'B'. At this setting the Shutter will remain open for as long as the Shutter Release Button [2] is pressed down. A sturdy tripod is really essential for this type of work, though sometimes it is possible to find an alternative firm support (a street bollard or church pew, for example). A cable release, preferably the locking type, is also recommended for extra steadiness. If such a release is not available the shutter can be kept open for extended periods, via the 'T' lock, simply by pressing the Release Button [2] down firmly and turning at the same time in an anti-clockwise direction, (as seen from top of

'T' or
Time Lock





camera) until it stops. The shutter will remain open for as long as desired and is closed on completion of exposure by pressing down the Release Button once more and returning same, clockwise, to its normal position. To reduce the risk of vibration it is recommended that a piece of black card (or even one's hat) be held in front of the lens as the Release Button is pressed and turned – the lens is then uncovered for the required time (using a stopwatch or slow count) and then recovered to end the exposure while the Release Button is returned to its normal position. Obviously this procedure only applies to long exposures of several seconds.

Note After using the 'T' or Time lock on the Release Button always make certain that the Release Button [2] is turned fully clockwise and,

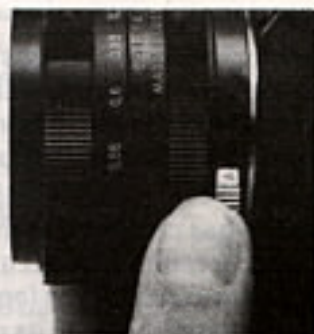
with the Zenith EM, that the Rewind Release Ring [3] is still turned fully clockwise and the three dots are properly aligned. This will ensure correct operation of shutter and exposure counter in subsequent pictures.

Your camera's Tripod Bush accepts a standard $\frac{1}{4}$ " Whitworth screw. When fitting a tripod or other bush mounted accessory (e.g. flashbar) care should be taken to see that this is screwed in just finger-tight only (this applies to the carrying-case retaining-screw also). If there is a safety locking-nut on the accessory, turn the main screw up to three revolutions only, then hold it in position and lock into place with the safety nut.

Apertures

First the Helios 44M, the standard lens supplied with the Zenith EM camera; this is designed to be used in Automatic or Manual mode. When the Auto/Manual Switch [36] is set to 'A', the aperture remains fully open for viewing

and focusing and closes down automatically to a pre-selected f/number value when the Shutter



Release Button [2] is pressed down. When the Auto/Manual Switch [36] is set to 'M', the aperture closes down immediately to whatever f/number has been selected on the Aperture Ring [24]. Thereafter apertures are changed manually by moving the Aperture Ring into any of its 'click-stop' positions. Normally the lens would be used in Automatic mode, in which case the lens opening required (f/2, f/2.8, f/4, etc.) is selected by turning Aperture Ring [24] until that f/number (or a position mid-way between marked lens openings, if so indicated by the Exposure Meter Aperture Indicator Dial [18]) aligns with the red Distance/Aperture Index Mark [11] (see p.9). As soon as pressure is taken off the Shutter Release Button, the aperture automatically returns to its wide-open position.

For Zenith E & B cameras the standard lenses are the Helios 44 with pre-set aperture mechanism or the Industar 50 with a purely manual, non-click-stopped mechanism. Operation is as follows:—

Helios 44 — Turn the Diaphragm setting ring (which has click-stops at full apertures) until the f/number required is set against the red index dot on the front ring of the lens. Now turn the Pre-set Diaphragm Ring until its red index dot is also aligned with the dot on the front ring and the lens is at full aperture for viewing and focusing. After

focusing turn the Pre-set Ring as far as it will go in a clockwise direction (as seen from top or back of camera) — this closes the lens down to the pre-selected aperture in readiness for picture taking. With practise you do not even have to look at the lens after initially setting the aperture required — with the camera held to the eye, simply turn the Pre-set Ring fully *anti-clockwise* for wide aperture viewing and focusing, then turn it fully *clockwise* after focusing to take your picture, assured that the aperture will be closed down to its predetermined setting. You can even change apertures without taking the camera from your eye; first set the lens to full aperture, then turn Diaphragm Setting Ring — each click to the left selects one larger aperture, each click to the right selects one smaller aperture. Remember of course to close down to the newly selected aperture with the Pre-set Ring as previously described.

Industar 50 — Turn the Diaphragm Setting Ring at the front of the lens until its index dot aligns with the figure 3.5 on the Diaphragm Scale, viewing and focusing at eye level. You must now take the camera away from your eye, since the aperture required for picture taking can only be set after focusing (it is usually too difficult to see or focus clearly when the lens is closed down, since less light enters the viewfinder).



Index of the diaphragm setting ring

Diaphragm setting ring – click-stopped

Pre-set diaphragm ring with index

Depth-of-field scale and distance index

Distance scale

Focusing ring



Diaphragm setting ring with index

Focusing ring with diaphragm scale

Distance scale

Depth-of-field scale and distance index

Choosing shutter speeds and lens openings

As seen from an earlier illustration, your exposure meter indicates various combinations of shutter speed and aperture that will each produce good results under given conditions of lighting and film sensitivity. However, you will often need to select a particular shutter speed or aperture to suit your subject so how do you choose? For example, the suggested shutter speed of $1/125$ th second, while fast enough to stop most normal subject movement (people walking etc.), would not be

At $1/30$ th second



enough to freeze the really fast action of subjects such as children at play, sports events or racing cars – here a speed of $1/250$ th or $1/500$ th second would be best. Again, if taking a landscape type picture, a small aperture of say $f/11$ or $f/16$ would be needed to obtain maximum sharpness (see Depth of Field). Summarising then; with moving subjects, choice of shutter speeds is of most importance, to stop the motion use the fastest speed possible that lighting conditions will allow;

At $1/500$ th second



where you need your subject to be sharp over a long range from foreground to background, then choosing a small lens aperture is more important. It's worth knowing too the relationship between shutter speed and aperture settings (especially important if using exposure tables, as these generally detail changes of aperture according to lighting conditions at a fixed shutter speed – most commonly our suggested 1/125th second). These settings are so designed that altering from one figure to another on either scale, will double or halve the amount of light reaching the film. An aperture of f/5.6 is wider than, and will transmit twice as much light as, an aperture of f/8, and at the same time is smaller than, and will transmit half as much light as, an aperture of f/4. Likewise a shutter speed of 1/125th second is slower than, and will transmit twice as much light as, a speed of

1/250th and is at the same time faster than, and will transmit half the amount of light as, a speed of 1/60th second. Thus if you start from a given combination, say 1/125th at f/8, and you decide that a shutter speed of 1/250th would be better for the subject and you want to finish up with the same amount of exposure, you will need to compensate for the fact that only half the necessary light is reaching the film by opening the aperture one division to f/5.6. If you had decided that 1/500th were the best speed you would need to open the aperture by two divisions (from f/8 to f/4) since 1/500th is two divisions up from, or a quarter the speed of, 1/125th second.

Remember though that all combinations of shutter speed and aperture are a compromise. There is really no 'correct' exposure for any subject, it all depends on the effect you want.

Aperture 2 2.8 4 5.6 8 11 16



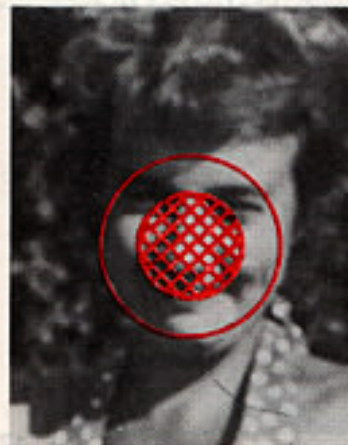
Light Ratio 1 1/2 1/4 1/8 1/16 1/32 1/64

Viewing and focusing

First make sure your lens is securely attached to the camera by turning it clockwise until no further movement is possible.

Look through the viewfinder eyepiece [30] and you can feel safe in the knowledge that there'll be no parallax problems (no more cut-off heads in close-up portraits and the like) as you are viewing and focusing, by means of a ground-glass screen,

Out of focus



In focus



through the actual lens that takes the finished picture. There's a built-in safety margin of course, in common with many other modern single lens reflex cameras, the viewfinder showing an overall area somewhat smaller than the total film area. This ensures that *everything you see in the viewfinder appears* in the finished picture despite the fact that slidemounts and masks in printing equipment actually cover part of the film's image.

Focusing should always be carried out with the aperture wide open, unless of course you want to preview 'depth-of-field', so follow the previous instructions concerning aperture operation for the three standard lenses. With the camera held to your eye turn the Focusing Ring [12] towards the right for close distances or towards the left for far distances, until the subject is sharp and clear on the large ground-glass screen. The Zenith EM camera has in addition in the centre of its screen, two aids for speedier critical focusing, a **microprism spot** which is composed of literally hundreds of tiny

prisms that distort and accentuate an out-of-focus image. Simply focus the lens until you obtain a single undistorted image at the centre and you are at the point of sharpest focus. This microprism works well for the majority of subjects and conditions but for subjects lacking in contrast or colour the **fine ground-glass collar** around the central spot is probably more helpful – it's quite handy when using long telephoto and wide angle lenses too. (Aim your camera at this instruction book from about 2 feet away and you'll see how these focusing aids work). You can of course also use the Distance Scale [26] of your lens, which is calibrated in metres, to set the focus. Generally there's no need to check distance, it's almost always easier to use the viewfinder; the only time it becomes necessary is when taking flash pictures (see p. 26) or when 'depth-of-field' is important.

● The Red 'R' just to the right of the Distance Indicator [11] on the Helios 44M shows the correction required for infra-red films. When using infra-red films, first focus in the normal manner, and note the indicated distance. Then move the Focusing Ring [12] so that that distance is now aligned with the Red 'R'. Remember – this is needed only when using infra-red films which are sensitive

to light rays which focus at a slightly different plane than ordinary light rays.

● A 16mm diameter prescription lens can be inserted into the Viewfinder Eyepiece [30] and held in place by Retaining Ring [31]. Spectacle wearers may find this helpful for critical work.



On certain E/EM models the detachable Retaining Ring (31) has been replaced by an optional 'slip-on' holder. If difficulty is experienced in obtaining either of these accessories we recommend you contact Visual Aids, East Street, Bromley, Kent, BR1 1QX.

Depth-of-field

All photographic lenses, when focused on a given subject, will show some objects in front of and behind that subject more or less sharply. This 'range' of extra sharpness is called 'depth-of-field' and varies with different lenses; it's greatest with wide angle lenses, and least with telephoto lenses. With any lens, you'll find your depth-of-field is always **greater** (more things in focus) **at small lens apertures** such as f/11 or f/16 and **lesser** (fewer things in focus) **at larger lens apertures** such as f/3.5, f/2.8 or f/2. Depth-of-field is also greater in cases of more distant subjects than it is with close-up subjects and increases nearly twice as much beyond the subject, your main point of focus, than it does in front of the subject (towards the camera).

If your picture is such that you want both nearby and distant objects to be in sharp focus then generally the smallest possible aperture should be used. However, the aesthetic quality of a picture can often be improved by having the principal subject in sharp focus while other objects in the

scene are soft and out-of-focus. Here a larger aperture is necessary to produce the 'differential focus' that de-emphasises distracting background and/or foreground detail and thus isolates, and concentrates your viewer's attention on, the principal subject.

You may want to 'preview' depth-of-field prior to exposure. This can be done in two ways, first by pressing the Shutter Release Button [2] smoothly until it reaches the definite stopping point, just before firing the shutter. This closes the aperture down to its pre-set value and enables you to get an idea (despite the dimness) of what will or will not be sharp – the final photograph will be at least as sharp if not sharper than the viewfinder image. The second method is to turn the Auto/Manual Switch [36] to the 'M' position which has the effect of manually closing the aperture down to the pre-selected lens opening – this is probably easier to master than the first method but you must remember to return the Switch after use to the 'A' position ready for normal operation. With the Helios 44 and Industar 50 lenses, follow the previous instructions regarding aperture operation and you'll see that even though they lack the automatic aperture closing feature, depth-of-field can still be previewed prior to taking the picture.

Using the depth-of-field scale [25]

The scale consists of the aperture numbers repeated each side of the Distance Index [11] and shows, at any given focus distance, the nearest limits and furthest limits of acceptable sharpness. Taking the Helios 44M lens as an example, if this is focused at 4 metres, the depth-of-field stretches from 3 metres to 6 metres at an aperture of $f/5.6$ while at an aperture of $f/16$ objects from 2 metres to infinity (∞) will be acceptably sharp in the final picture. **Note:** For the sake of reading clarity some

At $f/2$

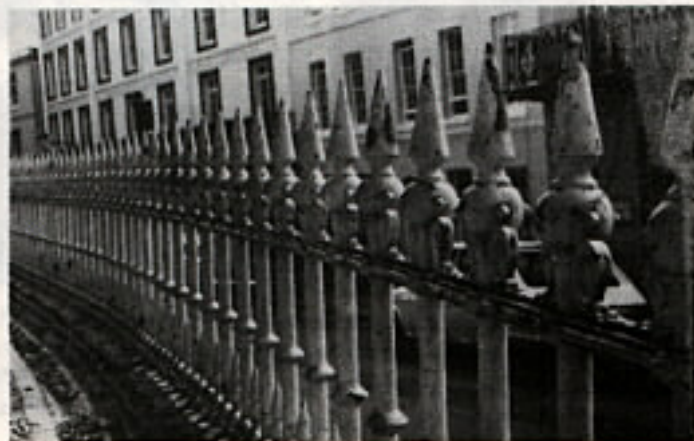


figures are omitted from the scale; however, it's a simple matter to 'fill in' those missing if you remember they follow the aperture sequence exactly, with those proceeding left from the index [11] showing the near limits of sharpness, and those proceeding right showing the far limits.

Now for some practical examples

(a) You're taking a landscape view where you want everything needlesharp from the foreground all the way to the background. Easy you say, close the aperture right down to $f/16$ – the snag is that the sky has clouded over and the light is too poor to use

At $f/16$



this aperture at a reasonable shutter speed. The remedy – obtain the maximum depth-of-field required with the minimum of 'stopping-down' (decreasing aperture size). Focus through the viewfinder on the closest object and note the distance (say 3m) registered against the Index [11], then focus on the most distant part of your subject and note this distance (say 10m) also. Now look at your lens and move the Focusing Ring [12] until both distances appear just between an identical pair of aperture numbers (f/8, in above example), on the Depth-of-Field scale [25]. Set the lens to the aperture thus found, use your exposure meter to determine the correct shutter speed for an exposure at this aperture, then set this speed on the Shutter Speed Dial [5]. Everything between the two distances (3 to 10 metres) shown by the matching aperture numbers (f/8) on the Depth-of-Field scale [25] will appear sharp in the final photograph.

(b) If you need absolute maximum depth-of-field at any given aperture focus on the 'hyperfocal distance'. This is found by aligning the infinity mark (∞) against the Distance Index [11]. The distance then found to be aligning with the near limit of depth-of-field for the aperture required will be the 'hyperfocal distance'. If the lens is now refocused so that this distance aligns with the

Index [11] everything will be sharp from half the distance to infinity.

(c) To obtain a 'differential focus' effect, determine the closest and most distant parts of your subject as described in example (a) above, then refocus the lens so that the distance of the important part of your subject aligns with, or is near to, either the near or far limits (according to whether you want foreground or background out-of-focus) on the Depth-of-Field scale [25] when using a largish aperture, say f/4. Set lens and camera controls as necessary and you'll be assured of obtaining a picture of high subject impact.

Here we can see that the 10 metre focus setting is in fact the hyperfocal distance for an aperture of f/8 which gives us

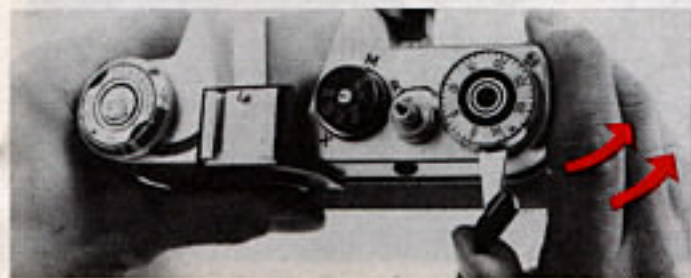
the maximum depth-of-field possible from that lens, extending from half that distance (5 metres) to infinity.



Taking the picture

Poor first-time results are largely attributable to camera shake, so it's *very important to hold the camera steady using both hands*. You will probably find it most convenient to grip the camera firmly with your right hand and fire the Shutter Release Button with your right fore-finger. This way your left hand can easily turn the Focusing Ring and give extra support at the same time. *Always* press the Shutter Release Button downwards smoothly and firmly – NEVER jab at it. (On the Zenith EM make sure you do not accidentally restrict movement of the Shutter Speed Dial while depressing the Release Button).

For each Successive Exposure . . . just move the Transport Lever until fully wound and you're



*Note the extra support the left hand gives without obstructing Meter Window [23].
Note also 'correct' finger position for smooth release of shutter.*

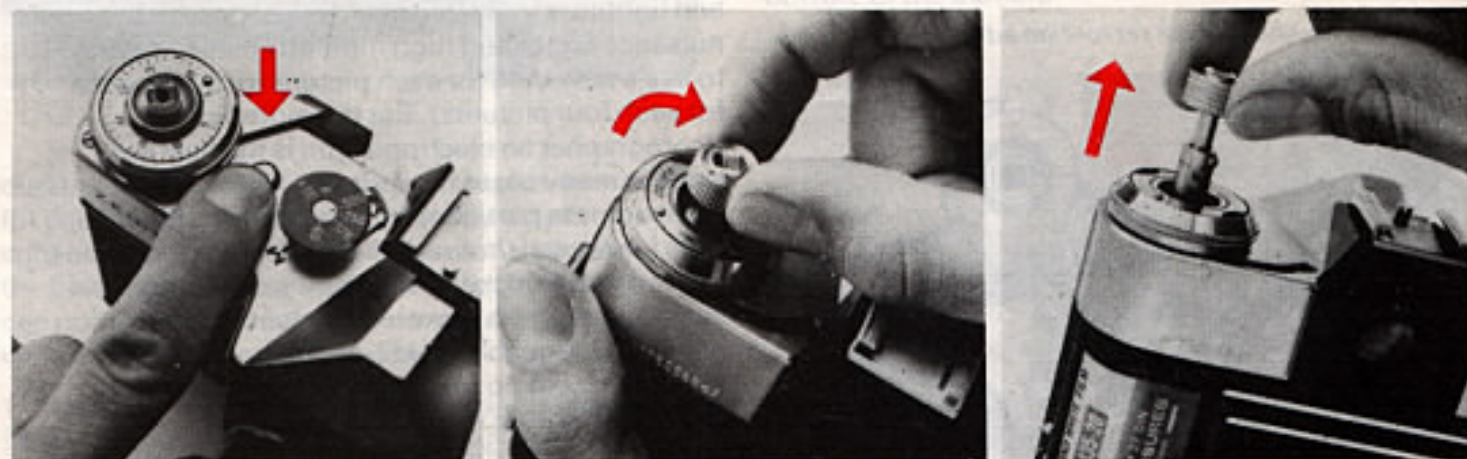
(2) Releasing the film for rewinding. Zenith E and B models have a Rewind Button (see below) which must be pressed and held down firmly during the entire rewinding operation. The Zenith EM has a locking device which permits rewinding without constant application of pressure. To engage it first press the Shutter Release Button [2] then turn the Rewind Release Ring [3] fully anti-clockwise. Make sure the Ring is turned until no further movement is possible and you'll then be able to rewind the whole film quite freely.

(3) Rewinding. The Rewind Knob [22] should be

Zenith E & B rewind release

gripped firmly and rotated in a clockwise direction (as indicated by the engraved arrow). While resistance is felt you are rewinding the film back into the cassette (the knob will turn freely without resistance when the film has been fully rewound).

● On Zenith B models the Rewind Knob is ready to hand. On Zenith EM and E models it is spring-loaded and recessed within the exposure meter controls and must therefore be raised first into rewind position by gently pressing against the top of the knob and turning it anti-clockwise at the same time.



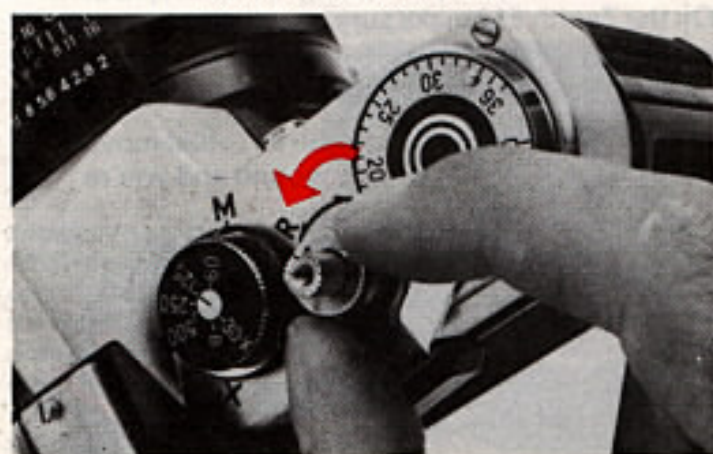
ready for your next shot. If lighting conditions have not changed it is only necessary to frame the subject, focus and fire the shutter. If taking a photograph in a slightly different direction or if the sun clouds over, take a further meter reading or consult film exposure tables and make any adjustments to camera and lens controls that might become necessary before firing the shutter.

NOTE. Keep an eye on the Frame Counter [4]. When this registers a figure indicating that the entire length of film has been exposed, or if the Film Transport Lever cannot be turned, it is time to rewind the film into its cassette ready for processing. **DO NOT** try to get an extra exposure – if the Transport Lever is wound forcibly the film may be damaged and disengage from the cassette making it impossible to rewind.

Removing exposed film

(1) Before attempting to rewind a film put the cap, supplied with your camera, back on the lens. This is simply a precautionary measure to prevent any portion of the last frame being exposed to light, since the Rewind Release has the effect of firing the shutter even if, as sometimes happens, the Transport Lever is only partly wound when the end of the film has been reached.

Zenith EM rewind release

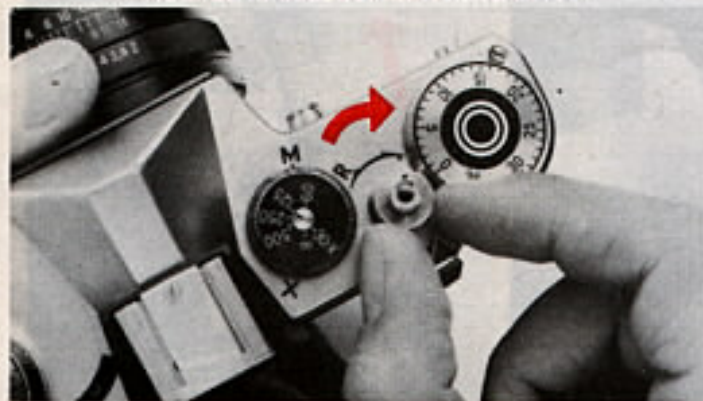


● Remember the Rewind Release Button on Zenith E and B models must be held down firmly until the film has been fully rewound.

(4) Having rewound the film, remove the camera from its case, raise the Back Catch [20] and swing the Camera Back [38] open. Pull the Rewind Knob [22] upwards fully and take the cassette of exposed film out of its Chamber [27]. Your film is now ready for processing.

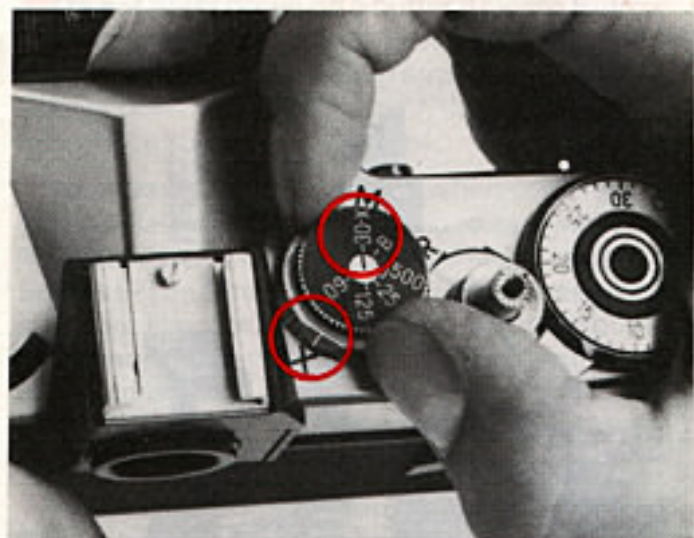
(5) The camera can now be reloaded (after observing precautions on p. 6). If you don't want to reload till a later date return the Rewind Knob to its 'closed' position.

Rewind release set for film advance



Taking flash pictures

When the light is poor some form of auxiliary lighting will be required. This is why your Zenith has a built-in synchroniser which enables you to use either electronic or bulb/cube flashguns. There are pros and cons for each type – if you think you will only be taking occasional flash pictures (at party times etc) then a bulb or cube gun is best, since its advantages of low initial cost, compactness and lightness in weight may well outweigh the nuisance factor and high running costs of having to use a new bulb for each picture (or a new cube for each four pictures). For the more serious photographer an electronic gun is the best bet, since in many cases nowadays it too offers compactness plus almost unlimited life (the tube lasts for *several thousand* flashes and gives dozens or even hundreds of flashes on a set of batteries – some can even be powered by mains supply or mains rechargeable nickel-cadmium batteries that further cut down on running costs). More advanced models even boast a built-in mini-computer which automatically regulates the



duration of the flash according to subject distance for perfect exposure. We recommend you to consult your Zenith camera dealer for advice on the best type of gun to suit your needs – here we can only give guidance on the procedure and technique of flash photography.

1. Make sure the Flash Synchronisation Selector [6] is fully aligned with the appropriate setting 'X' for electronic flash, 'M' for bulb and cube flash.

2. The Shutter Speed Dial [5] *must* be set at 1/30th second whether using bulb/cube or electronic flash.

● The shutter will not synchronise correctly (i.e. will not open at the time the flash is at its brightest) if the wrong setting or any other shutter speed is used.

3. Small lightweight flashguns may be safely clipped into the Accessory Shoe [13] on top of the camera. Some electronic guns being heavier may need a separate mounting bracket or 'flash bar' which screws into the Tripod Bush [35] at the bottom of the camera.



4. Plug your flash gun into the Flash Synchronisation Socket [7] making sure its tip is pushed in firmly.

● The short burst of light from a flash is too brief to be measured under normal circumstances, so exposure for flash photography is governed by the sensitivity or speed rating of the film in use, light output or power of the gun and its distance from the subject. This is why most modern flashguns, of whatever type, have calculator dials or scales on them which indicate the correct aperture according to film speed and distance.

Obviously the type of calculator dial or scale will vary with each make of gun, so consult the instruction book supplied with your unit, or your dealer for exact information – the general operating rule however is...

5. Look through the viewfinder and focus on your subject. You can then find from the calculator dial/scale the correct lens opening for the actual camera-to-subject distance that is shown by your lens' Distance Scale [26]. The Aperture Ring [24] must then be set accordingly. Remember that with the Helios 44 and Industar 50 lenses the aperture must be closed down manually after focusing.



● Do not press down on Shutter Release Button [2] unless actually taking a flash picture since this will fire the flash even if the Transport Lever [1] has not been wound. However, there will be no loss of film should this happen.

● If the flash unit does not fire when you press the Shutter Release Button [2] make sure that the lead is securely plugged into the Flash Synch. Socket [7] and that the Selector [6] is properly set in the appropriate position. With electronic guns also check that unit is switched on and with bulb or cube guns that, (a) the bulb/cube is pushed fully home and (b) the battery is still fresh (most such guns have a battery check device).

● Always make sure Transport Lever [1] is fully wound before a new bulb is inserted into a bulb flash gun that is connected to the camera.

● When not using flash, the Synchronisation Selector [6] may be set in either the 'X' or 'M' position.

Using the self timer

Your Zenith camera has a built-in self timer that trips the shutter after at least a 7 second delay thus enabling you to get into the picture yourself. Here is how to use it . . .

1. Support the camera on something firm, a tripod is best, but any stable surface such as a nearby table or shelf will do.
2. All main controls are set as normal, i.e. Wind Film Transport Lever [1] then frame and focus on the general subject area. Select the required shutter speed and close the lens opening down to the required aperture (with the Zenith EM you must first set the Lens Auto/Manual switch [36] to the 'M' position).
3. Turn the Self-Timer Lever [10] downwards in an anticlockwise motion until no further movement is possible. (As you move this Lever on the Zenith EM camera you'll see an 'M' sticker beneath it which is there simply to remind you to set this camera's lens to the Manual position as previously mentioned.
4. Now press the Self-Timer Release Button [9] and move into the picture area as quickly as possible. The lever [10] will slowly return to its normal

position releasing the shutter automatically during its travel.

- Make sure the Self-Timer has been *fully* wound before pressing the Release Button [9] as otherwise the shutter will not operate. (If this happens just move the Self-Timer Lever downwards again – fully this time! – and press the Timer Release Button again.

- If you decide not to use the Self-Timer after moving the lever down, simply take your next picture by pressing the Shutter Release Button [2] as normal. Then before winding Film Transport Lever [1] press the Timer Release Button [9] and the timer will return to normal position. NEVER

leave the self timer lever in the 'wound' position for extended periods.

- An extra tip: if the shutter speed is set at 'B' and the self-timer mechanism is used you will obtain a 'time exposure' of between 1 and 5 seconds. The actual time of exposure will vary from camera to camera, so we suggest you determine the time for your particular camera, as it may well come in handy to know when taking pictures in dimly lit conditions.

- If required, the Self-Timer can also be used in conjunction with a flashgun (of either type) observing of course the previous notes on flash photography.



Changing lenses

Your Zenith camera is fitted with a Universal 42mm thread mount (except for some very early Zenith B and E models which had a 39mm thread mount). A range of 42mm mount preset diaphragm lenses, designed primarily for the Zenith E & B but usable on the Zenith EM in Manual mode, is available from your dealer. You are also able to choose from literally hundreds of lenses made both by other camera manufacturers and independent lens makers.

To remove a lens just grip the whole barrel firmly and give it about three turns to the left (anti-clockwise). To attach a lens simply screw it firmly into the camera's mount in a clockwise direction; when it stops, give it a slight extra twist to ensure that it is securely attached. **Note** – when refitting lenses with an auto-manual control, such as the standard lens fitted on the Zenith EM, make certain that the lens is set to the 'A' position before taking further photographs. This ensures that you will be able to frame and focus easily.

● Thread mount lenses, particularly those of different manufacture to the camera, may



sometimes fit with the aperture and distance scales slightly to the right or left of the centre position. This does not indicate any defect in your camera or lens and in no way affects the camera/lens operation.

● Take care not to expose your camera's interior to dust, dirt or moisture when the lens has been removed. Always replace the lens in the body as soon as possible (or use a body cap obtainable from

your dealer). When removing or storing lenses, protect them from accidental damage by placing them face down and if possible, attaching a rear lens cap (again obtainable from your dealer but usually included with accessory lenses). This latter point is particularly important with lenses having an automatic aperture mechanism since you should always avoid putting undue pressure on the metal control pin at the rear.

● Only standard Automatic Lenses with a single pin operating the aperture mechanism can be used with the Zenith EM. Lenses designed specifically for use with more advanced methods of electrically or mechanically coupled automatic systems, which have extra keying levers on the mounting flange, should not be used (see illustration).

● All modern high-quality lenses such as that fitted to your Zenith camera are made from special grades of optical glass. During the manufacturing process small bubbles almost inevitably occur within the glass, but these have no adverse affect whatsoever on the functioning of the composite photographic lens.



Not for use with Zenith EM



For Zenith EM

Caring for your camera and accessories

Your Zenith is a ruggedly-built camera designed to provide many years of dependable performance. If you want the longest service and best performance, always treat your camera and accessories as you would any precision instrument — with care and respect !

● **First and foremost keep them clean !** Your camera should be kept in its carrying case whenever possible. The case is designed to permit all operating functions, except loading/unloading, to be performed while the camera is inside. It will help protect your camera and lens from dust, dirt, moisture and light knocks against hard surfaces — the natural enemies of all cameras.

The Zenith EM camera can be carried outside its case if preferred [your dealer can supply an accessory neck strap which attaches to the body eyelets [8] & [21], but if it is, take extra care to guard it against bumps and jolts. Remember too that on the beach sand and sea-spray somehow seem to get everywhere ; even a closed carrying

case needs extra protection (a large polythene bag is quite good).

The lens in particular, which can be quite easily scratched, should be protected at all times — an Ultra-Violet filter is very good here since it needs no exposure correction and can therefore be kept on the lens almost permanently as protection against dust and the weather.

● **When cleaning becomes necessary** as it almost inevitably will with outdoor use, any accumulated dust in the camera body can be lightly brushed away with a soft brush, or preferably blower-brush. Don't forget to keep the Exposure Meter Window [23] clean by the same means, as otherwise accuracy of the meter is likely to be impaired. Exterior metal parts can be cleaned with a soft clean cloth moistened with ether or absolute alcohol. NEVER touch the lens or mirror surfaces with the hands—fingerprints diminish optical efficiency and due to natural skin acidity may in

time damage the delicate optical coating of the lens and surface silvering of the mirror – *only* an air blower (bulb type or similar) should be used for removal of dust. Any stubborn traces of dirt or condensation left on the *lens* after this can be removed by lightly wiping over the surface with a clean soft piece of lint-free fabric or cotton (or a pad of surgical cotton-wool on the end of a matchstick) that has been dampened with absolute alcohol, ether or ether spirit mixture ; any smears can be removed with a dry soft cloth. **NO ATTEMPT** should be made to clean the mirror or viewing screen by wet means – air cleaning *only* is allowed and this is usually best left to a specialist.

● **Protect your camera from extremes of heat, or humidity.** Never leave it inside the glove compartment or boot of a car – on a hot day temperatures of 100 °C can build up – and most important **NEVER** leave your camera out in the open sun. Heat is bad for the film and camera lubricants and the lens can act as a burning-glass causing damage to the camera's interior. Also prolonged exposure to intense sunlight can adversely affect the Selenium Cell that powers the meter on Zenith EM and E Models.

● **Storage** – If your camera is likely to be left unused for some time (several days or more) always make sure the shutter and self-timer mechanisms are released first. When wound, these mechanisms are under strong spring tension ; by releasing them you eliminate the tension and avoid any undue strain.

Keep the camera enclosed in its carrying case with the lens cap on too. Do not store in humid conditions unless a suitable drying agent, such as silicagel in a sealed container, is placed alongside it.

If you do not use your camera regularly, and especially before going on holiday or an important occasion such as a wedding etc., we recommend that you run off a test film making sure that all variable settings including the self-timer mechanism are used.

Trouble shooting

Your Zenith camera is designed to give you thousands of pleasurable photographs. Like any precision instrument, your camera's controls must

be operated correctly for best results. Should you at any time experience any apparent malfunction with your camera check the following handy trouble-shooting chart. Chances are you will be able to solve your own problem on the spot.

If this happens . . .

Here is why . . .

And how to correct it . . .

Prior to loading, Film Sprockets [32] free-wheel and do not turn when Transport Lever [1] is turned.

Rewind Release Ring [3] (Zenith EM Only) not turned fully to the right (clockwise).

Turn Rewind Release Ring completely to the right until no further movement is possible.

After loading, Frame Counter [4] skips two or more numbers after being set to '0' position.

Film Transport Lever [1] not fully wound before counter is set to '0' position.

Advance Transport Lever fully before setting counter to '0'

Shutter Release Button [2] does not trip shutter.

Film Transport Lever [1] not fully wound.

Always operate Transport Lever in two strokes. It will stop mid-way during the second stroke assuring you that shutter is completely wound.

Exposure Counter [4] 'skips', counting incorrectly.

See above – or Counter set before Transport Lever was wound.

See above – always wind set Transport Lever before setting counter.

If this happens . . .**Here is why . . .****And how to correct it . . .**

Film Transport Lever [1] does not stop after two or more strokes.

Rewind Release [3] (Zenith EM only) not turned fully clockwise so that three dots are lined up. Shutter Release Button [2] not turned fully clockwise (to the right).

Turn Rewind Release Ring and Shutter Release Button completely to the right, until no further movement is possible.

Self-Timer does not trip shutter.

Self-Timer Lever [10] not fully wound. Transport Lever [1] not wound.

Wind Self-Timer Lever fully until lever points downwards with no further movement possible. Always ensure Transport Lever is fully wound before setting Self-Timer Lever.

Lens does not close down to indicated aperture when Self-Timer is used (EM only).

Auto/Manual Switch [36] on lens not set on 'M'.

Move Auto/Manual Switch to 'M' whenever Self-Timer is used.

Flash unit fires when Shutter Release is partially pressed, or does not fire.

'X' or 'M' Indicator [6] not aligned correctly.

Move Indicator fully to 'X' position for electronic flash or 'M' position for flash cubes and bulbs.

If anything should go wrong with your Zenith and the preceding chart has not got you out of trouble, NEVER attempt to mend it yourself – you could turn a minor adjustment into an expensive repair.

Remember that your Zenith and its accessories are backed up by top-class service facilities where factory-trained specialists are available to put things right, quickly and inexpensively.

can be more effective than masses of strong colour. The camera is not as selective as the eye, which is why a bed of mixed flowers is rarely a good subject for colour film.

● **Try to include something in the foreground of landscapes.** A picture of distant scenery will often be improved just by a bush, a rustic gate or trees in the foreground. People too, add life and impact to all kinds of outdoor photography – a photograph of a winding country lane is *good*, add

a person walking down that lane and the picture may very well be *great*. (If nobody's around get into the scene yourself by using the camera's self-timer).

● **Shoot from higher and lower angles –** Taking pictures of small children? Get down to their level – literally. Kneel down, so that your camera is at eye-level with the child (instead of aiming down). The result, again, will be a much more interesting, natural-looking photograph. Taking pictures of a group of people? See if there



Composition or . . . taking better pictures

Composition is concerned with what you put into your picture and where; its final control lies in *your* hands. A slight amount of extra thought and/or effort on your part can often turn what would have been an otherwise ordinary-looking photograph into one which is stunningly attractive. There are so many factors involved that probably thousands of books have been written on this aspect alone – however here are some basic picture-taking tips that will help you take better pictures starting right from your very first roll of film . . .

● **Isolate your subject** – Concentrate your viewer's attention on the subject of your photograph, move in as close as possible, filling the viewfinder frame and eliminating all extraneous foreground and background detail. Remember that you can safely compose direct in the viewfinder, you see what the lens sees (in fact there'll be a little more actual film image as previously mentioned due to the viewfinder's built-in safety margin). Another way to eliminate extraneous detail and gain impact for your subject is to use the 'differential focus' technique described on page

20. With some subjects (e.g. sporting events, wildlife, distant objects of all kinds) you're unable, or it's inconvenient, to get in close – here a *telephoto lens* scores as it "compresses" space making distant objects appear closer. Taking in less of the field of view it also teaches you to be selective in choice of subject and viewpoint.

● **Keep it simple** – a few bold masses nicely contrasting with each other are more pleasing to the eye than a confusion of small detail. Aim to achieve balance more than symmetry. Have objects of uneven size balancing each other rather than a geometric arrangement of equal sized objects. Choose surroundings and backgrounds carefully – those that complement your subject rather than take interest away from it. A person standing in front of a fussy background such as a building (unless it is 'thrown out of focus') is seldom as attractive as a close-up of the same person against a background of trees or clear sky.

● **With colour** – Complementary colours suggest harmony – clashing colours suggest conflict. Pastel shades with a tiny, brightly-coloured accent

Choosing and using accessories

The range of ancillary equipment available for your Zenith (both from the USSR and a multitude of other sources) is so vast that we can only give very brief details here of the when, why and how of choice and use.

Wide-Angle Lenses – are available in focal lengths from 16mm to about 35mm, the shorter the focal length the wider the area covered. They are used in any situation that requires greater-than-normal area coverage, e.g., landscapes, interiors, architectural photography etc. In space-inhibiting



With 28mm lens



With 58mm lens

are stairs nearby so you can shoot from a higher angle. Each person in the group will be more visible than if you shot them at eye level.

● **Avoid tilting the camera to include the top of a tall building.** In the finished picture it will look as if the building is falling over backwards. Always use a wide-angle lens for best results when you want to take in a broader field of view than is possible with your standard lens. (Sometimes of course perspective distortion like this can be used to good effect for subject impact).

● **Ask your subjects NOT to look at the camera** – Pictures of people are usually much more natural looking when the people are doing something, and looking at what they're doing. A picture of a do-it-yourself handyman absorbed in a project is going to be more interesting – and a better photo – than a picture of the same person standing up, staring at the camera. (Chances are, his expression will be a lot more relaxed and natural too). When your subject has forgotten about the camera is when you'll probably get your best pictures.

● **Don't be afraid to experiment** – For example a silhouette of a person watching a sunset can be much more attractive than an ordinary photograph of the same scene.



● **Look for unusual subjects and viewpoints.** A picture of a famous building or monument may well be attractive in its own right – so take it, but also take a picture of people looking at it or a reflection of it in a nearby window or even some close-up details of it against a clear sky etc. Bad weather can sometimes lead to very good pictures! A child gazing through a rain-splashed window, the play of bright lights in the water at the curbside, a figure walking through a snow-storm. Use your imagination, make your own 'rules' as you progress. Your pictures will be far more interesting, far more eye-catching.

relaxed and natural expressions. For longer range work (e.g. stadium sports, animals) a 200mm or even a 300mm lens could be a useful addition.

● Remember that telephotos magnify not only the image but also any camera or subject movement correspondingly, so (a) always use the fastest possible shutter speed (as a general guide a minimum speed roughly equivalent to the lens's focal length – e.g. 1/125th sec for a 135mm lens) and (b) if you're without a tripod try to find ways of bracing yourself to hold the camera extra-steady during exposure (e.g. stand with your body firm against a wall or rest both elbows on the top post of a fence). Wherever you are, try to find a position that gives camera and lens the best possible support; this slight additional effort will pay off in sharper clearer telephoto pictures.

● When using lenses of 200mm focal length or longer there may be some slight "cutting off" effect on the left hand side of the film image but this will probably be masked off by the slide mount or in printing.

Close Up Photography comes easy with your Zenith. Many pictures (say of two or three flowers, book or magazine illustrations) can be taken without any accessory at all – just turn the Focusing

Ring [12] of your standard lens to its minimum distance and move your camera towards the subject until the viewfinder image is at its sharpest ... you'll find you can fill the frame with an object around 6½" x 10" in area. For smaller subjects you need to get closer by using a *supplementary close-up lens* screwed into the filter mount of your standard lens or *extension tubes* or *bellows unit* inserted between camera and lens.

Supplementary lenses are easiest to use since they don't require any increase in exposure – set against this though they do reduce the camera lens's fine resolving power at the edge of the field unless the aperture is stopped well down. They are usually available in powers of 1, 2, or 3 dioptres;



situations they allow you to retain sufficient of more distant surroundings or background to show relationship to an important close-up subject. Generally a 28mm or 35mm type is found most useful since they're relatively inexpensive, usually have wider maximum apertures, and are less prone to distortion than the shorter focal lengths.

● A feature of wide-angle lenses is their extended 'depth-of-field', useful in landscape work especially but a possible disadvantage when it comes to ascertaining correct focus (e.g. the microprism spot in the Zenith EM viewfinder may not disappear entirely). Focusing is often easier if you first set the lens to its minimum distance setting, then raise the camera to your eye and turn



With 135mm lens

the focusing ring as quickly as possible until the image appears sharpest. (If you start with the lens at or close to the correct focusing distance, or hold the camera to your eye for a long time, it will probably be more difficult to distinguish the point of sharpest focus).

Telephoto Lenses are available in focal lengths from 85mm (1.5 x magnification compared to standard lens) to about 1000mm. A 135mm lens is generally found to be most useful, certainly for candid photography (children at play, people strolling, street buskers etc), as in most cases you'll find you get a large enough image on the film, and, because you're further away than normal, more pleasing perspective and some beautifully



With 300mm lens



First three pictures show effect of each single tube, fourth picture shows bellows used at maximum setting.

the higher the number the closer you can approach your subject (consult your dealer for the best type to suit your needs).

Extension tubes allow photography at even closer range than supplementary lenses. Normally sold in sets of 3 varying lengths, they can be used singly or in any combination to provide a number of fairly definite magnification steps, allowing you to fill the frame with subject sizes from about 2.7" x 4" to as small as 1½" x 1" (life size).

A bellows unit offers even further advantages since magnification is considerably greater and also continuously variable over a wide range (ideal for really small and even live subjects like insects).

Subjects ranging from about 0.8" x 1.2" to 0.4" x 0.6" (2.5 times life size – or even greater depending on lens in use) will fill the viewfinder frame.

● Since both extension tubes and bellows units make the light rays travel a greater distance as the lens is moved further from the film, they require an increase in exposure over that indicated by a meter reading. The increase required varies proportionately with the degree of extension and the focal length of the lens and can be found from the full data tables usually provided with tubes and bellows. This slight inconvenience in operation over the use of supplementaries is offset by the fact

that optical performance of the camera lens is not affected in any way and that a greater and more varied magnification range is obtainable.

Photomicrography – yes, you can even take pictures through a microscope with your Zenith I! At moderate magnifications no accessory is needed other than a rigid tripod or copy-stand to hold your camera, complete with lens, over the eye-piece of the microscope. For more professional results and at higher magnifications the camera body should be attached direct to the microscope by means of a 42mm thread mount CA-3 Microscope Adaptor (obtainable through your dealer or direct from Zenith House).



Lens Hoods help prevent stray light rays (from outside the picture area) from entering the lens and causing flare due to reflections from internal camera and lens surfaces – they generally improve picture contrast and are certainly essential if pictures are to be taken against any strong light source. Both folding rubber and rigid metal types are available from your dealer and these vary in shape and size according to lens focal length. (NEVER use a hood intended for long focus lens with a shorter focus lens).

Filters are discs of coloured glass or gelatine that are used to create special effects or improve rendering or contrast with colour or black and white films. A selection of the most useful types is shown opposite.

● To compensate for the light absorbed by the filter, an increase in exposure is required (except for 1A and UV filters). To obtain this, either (a) determine exposure in normal way, then open up lens the number of f/stops shown, or (b) divide ASA Film Speed by the 'Factor' listed, set the resultant (lower) film speed on your Exposure Meter or Flash Calculator, and then determine and set exposure in the normal way. (Consult film instructions for recommendations for specific film types.)

Filter Type	Appearance	Purpose	Film Types	EXPOSURE INCREASE*	
				f/stops	Factor
IA (Skylight)	Pale Amber	Improves colours outdoors when light is blue.	All	0	1
UV (UV16)	Colourless	Warms colours at high altitudes or when subjects are in shade. Darkens skies with black & white films.	All	0	1
Polarizer	Neutral	Eliminates reflections, glare from water, glass, darkens sky, makes clouds more prominent, improves colour saturation.	All	1½-2	3.0-4.0
81A	Red/yellow	Gives most pronounced 'warming' effect, use on overcast or rainy days.	Colour	½	1.4
82A	Light Blue	Reduces excessive reddishness of day-light in early morning, late evening.	Colour	½	1.5
K2 (Y2)	Yellow	Darkens sky, makes clouds stand out clearly.	B & W	1	2.0
O2(G)	Orange	More pronounced cloud/sky separation.	B & W	2	4.0
G2 (YG)	Yellow-Green	Lightens trees, grass, foliage; shows flesh tones more clearly where foliage is visible also darkens blue skies.	B & W	1	2.0

CAMERA FEATURES

Film: Kodak 127 roll film

Negative size— $1\frac{1}{8} \times 1\frac{1}{8}$ inches

12 snapshots per roll

Standard enlarged color and black-and-white prints—

$3\frac{1}{2} \times 3\frac{1}{2}$ inches

Color slides— 2×2 inches

Lens: Dakon—factory focused from 5 feet and beyond

Two lens openings—(13)* for Kodak color films—

(14)* for Kodak Verichrome Pan Film

*Exposure-value numbers

Shutter: Instantaneous, with double-exposure prevention

Finder: Eye-level—optical

Flash: Built-in—uses M-2 lamps only

Neck Strap: Adjustable—supplied with camera

Photo Aids: Kodak Close-Up Attachment No. 6A

Kodak Cloud Filter No. 6A

Kodaslide Pocket Viewer—Kodak Illuminator, Model 1 (for Kodaslide Pocket Viewer)

Kodaslide Dial-Lite Viewer (Model A)

Kodak 300 Projector

EASTMAN KODAK COMPANY, Rochester 4, N. Y.

1-55-SH-HXX

PRINTED IN THE UNITED STATES OF AMERICA

BROWNIE

Starflash
C A M E R A



WITH KODAK
DAKON LENS

1



2

3

YOUR BROWNIE STARFLASH TAKES ALL **3**



1 for 12 black-and-white snapshots



2 for 12 color snapshots



3 for 12 color slides

Uses Kodak 127 Films

Standard enlarged black-and-white or color prints—
3½ x 3½ inches

Color slides—2 x 2 inches, picture area 1½ x 1½ inches

To make sure you understand your camera, read these instructions. Before any important pictures, shoot a roll of film and take a few flash shots. Your Kodak dealer will be glad to help you.

Note: If you're practicing with an empty camera and find that the red shutter release cannot be pushed down, turn the wind knob on the bottom of the camera.

T.M. Reg. U.S. Pat. Off.

FIVE *do's* FOR PICTURE-TAKING FUN

The best color snapshots are made in bright sunlight or with flash. Kodak Verichrome Pan Film can be used on sunny or hazy days.

1

Be sure the sun is behind you.

2

Keep at least 5 feet away from your subject when using the 13 setting—at least 4 feet with the 14 setting.

3

Hold the camera steady and slowly press the shutter release.

4

Keep the picture simple—avoid confusing backgrounds.

5

Keep the lens clean—sparkling pictures will be your reward.

4



LOAD... *but never in bright, direct light*

1 Push the LEVER on the bottom of the camera to OPEN; then remove the FILM HOLDER as illustrated.

2 Place the end of the film spool under the fork of the SPRING pointed out by the word LOAD. Push up against the spring; then push in the other end of the spool and let it snap into the hole.

5



6 Look in the window on the camera back. Wind until the warning arrow appears; then slowly wind until the "1" is centered. The film name precedes each of the 12 numbers.

3 The empty spool should be over the WIND KNOB. If the end of the spool does not snap into the hole, turn the wind knob until it does.

4 Break the film seal; then draw the paper, colored side out, over the film holder marked **FILM THIS SIDE**. Thread the end of the paper fully into the slot of the empty spool. Turn the wind knob two full turns to make sure the paper is straight and tight. To make sure the paper is tight, apply pressure on the paper when winding two turns.

5 Replace the film holder; make sure it is all the way in. Lock it in place by moving the lever all the way to **LOCK**.

6

UNLOAD... *but never in bright, direct light*

1 After the 12th snapshot, wind until the end of the paper has passed the film window and is all wound on the spool.

2 Push the lever to **OPEN**. Remove the film holder. Grasp the end of the film spool near the forked spring and pull out the film.

3 Fold under the end of the paper. Seal it with the paper sticker.

4 To reload the camera, move the empty spool to the wind knob side.

Important: Do not leave the exposed film in bright light. Have your film developed as soon as possible.

7



OUTDOOR SNAPSHOTS

Important: When you're using Kodacolor Film or Kodak Ektachrome Film Daylight Type, have the subject in bright, direct sunlight.

1 Set the LENS OPENING LEVER by pressing it in and moving it all the way to the end of the slot.

- Set at the arrow under 13* COLOR for color films.
- Set at the arrow under 14* B & W for Kodak Verichrome Pan Film.

NEVER SET THE LEVER BETWEEN THESE POSITIONS.

*These are exposure-value numbers.

2 Compose the picture with your eye close to the finder so that you can see all 4 corners of the front finder frame. The square finder lens is directly above the film window.

3 Hold the camera steady while slowly pressing the SHUTTER RELEASE all the way down.

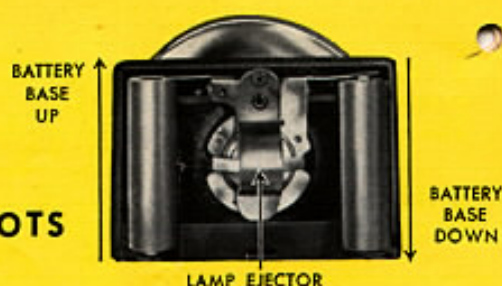
Note: A white spot will appear behind the lens to indicate that the film needs winding. Be sure to advance the film to the next number.

The shutter release remains locked after it is tripped until the wind knob is turned. This feature prevents accidental double exposures.



The picture shows the recommended way to hold the camera. It's important that you get a firm grip on the camera and that your finger or the neck strap is not in front of the taking lens.

FLASH SNAPSHOTS



Flash snapshots are just as easy as outdoor snapshots. Just pop in an M-2 lamp, aim, and shoot. To make color slides indoors use Kodak Ektachrome Film Type F and clear flash lamps. Kodak Verichrome Pan or Kodacolor Films can be used with either sunlight or flash.

1 Two 1½-volt photoflash penlite BATTERIES are required to flash the lamp. Be sure that these batteries are fresh (test at least 3½ amperes each). Weak batteries may cause flash failures. To install the batteries, unscrew the coin-slotted screw located above the LAMP EJECTOR and remove the battery cover. Insert the batteries—one, base down; the other, base up—as illustrated. Replace the battery cover.

10

2 Push the M-2 lamp into the socket until it clicks in place.

3 The distance from the camera to the subject is important, as is the setting of the lens-opening lever. Keep within the distances listed for the films in the table below and on the back cover plate.

4 Compose the picture; then take the snapshot. The lamp will flash when the shutter release is pressed.

5 Push the LAMP EJECTOR to eject the used lamp.

Camera-to-Subject Distance Table for M-2 lamps

Kodak Film	Verichrome Pan	Kodacolor	Ektachrome Type F
13 setting	9 to 25 ft	5 to 9 ft	6 to 8 ft
14 setting	6 to 16 ft	5 to 6 ft	5 ft

This table gives distance ranges for both lens-opening settings for three Kodak Films. Although the camera is marked 13 COLOR and B & W 14, flash pictures can be made at the 14 setting with color films for shorter distances—the 13 setting with Verichrome Pan for greater distances.

Note: Since lamps may shatter when flashed, the use of a transparent flashguard over the reflector is recommended. *Never flash lamps in an explosive atmosphere.*

11

WATCH OUT FOR THESE

You'll take better snapshots if you avoid the six common mistakes pictured below. Watch out for these when making pictures.

1 CAMERA MOVEMENT, during the exposure, results in a blurred picture. Hold the camera steady and press the shutter release with a slow, steady motion.

2 If you want to avoid pictures with a London fog effect, don't make pictures with a DIRTY LENS. Clean your lens with Kodak Lens Cleaning Paper.

3 If YOUR FINGER OR THE NECK STRAP IS IN FRONT OF THE LENS, you'll get a picture like this.

1



2



3



4



5



6

4 CLUTTERED BACKGROUNDS—trees, wires, poles—steal interest from the subject. Look beyond the subject before you shoot.

5 If everything but your subject is sharp, then you have SUBJECT MOVEMENT. Don't snap moving subjects.

6 When your SUBJECT IS TOO CLOSE to the camera (closer than 5 feet at the 13 setting or 4 feet at the 14 setting), it will appear fuzzy. Your camera will give sharp pictures of subjects 5 feet and beyond.

PHOTO AIDS

HOW TO MAKE GOOD PICTURES is perhaps the most famous and popular picture-taking book of all time. See your Kodak dealer for this and other publications.

THE KODAK CLOSE-UP ATTACHMENT NO. 6A is slipped over the lens for close-ups of people, flowers, etc. Make pictures from $1\frac{3}{4}$ to 4 feet at the 14 setting—from 2 to 3 feet at the 13 setting.

THE KODAK CLOUD FILTER NO. 6A captures fluffy clouds by making the blue sky appear darker. Use it with Kodak Verichrome Pan Film—*never with Kodak color films.*

THE KODASLIDE POCKET VIEWER combined with the **KODAK ILLUMINATOR, MODEL 1**, really lets you enjoy your slides.

THE KODASLIDE DIAL-LITE VIEWER (MODEL A) has focusing and brightness adjustments to permit fine slide viewing.

THE KODAK 300 PROJECTOR lets you see the full beauty of your color slides brilliantly projected on a screen.

See your photo dealer for these and other photo aids which increase your picture-taking fun.

GUARANTEE

Within a year after purchase, any repairs necessary to this Brownie Starflash Camera due to a defect in materials or workmanship will be made or, at our option, the camera will be replaced without charge. No other warranty or guarantee, express or implied, shall be applicable to this equipment. Nor are we responsible for loss of film, for other expenses or inconveniences, or for any consequential damages occasioned by the equipment.

In case of unsatisfactory operation, the camera should be sent directly or through a Kodak dealer to Eastman Kodak Company or a repair firm authorized by us to make such repairs. It should be accompanied by a description of the trouble encountered and other available information regarding the camera, including the date and place of purchase.

EASTMAN KODAK COMPANY
Rochester, New York



**Each
film
gives**



pictures

*Before taking any
important pictures,
shoot a roll of film
as a test.*

Films for colour pictures

'Kodacolor' Film makes colour negatives, which are then printed on paper to provide $3\frac{1}{2}" \times 3\frac{1}{2}"$ natural-colour 'Kodacolor' Prints. Of medium speed, 'Kodacolor' Film gives good colour pictures on bright days and, by flash, after dark or in dull weather.

'Ektachrome' Film gives you colour transparencies. These, in card Ready-mounts, are known as Superslides, or they may be supplied unmounted. These transparencies can also be used for making 'Kodak' Colour Prints, size $3\frac{1}{2}" \times 3\frac{1}{2}"$.

Always ask for colour prints on 'Kodak' Paper.

ASK FOR SIZE 127 FILM

Films for black-and-white

'Verichrome' Pan Film is an excellent film for both daylight and artificial-light photography. Fast but fine-grain emulsion ensures negatives from which big enlargements can be made.

'Tri-X' Pan Film is a panchromatic film of very high speed. It is ideal for snapshots in very poor light outdoors and for flashsnaps in large rooms.

Kodak

KODAK LIMITED LONDON

Printed in England 5/74/ISMH55360

HOW TO USE THE



Kodak

BROWNIE 44B CAMERA

VIEWFINDER

EXPOSURE BUTTON

BACK LATCH

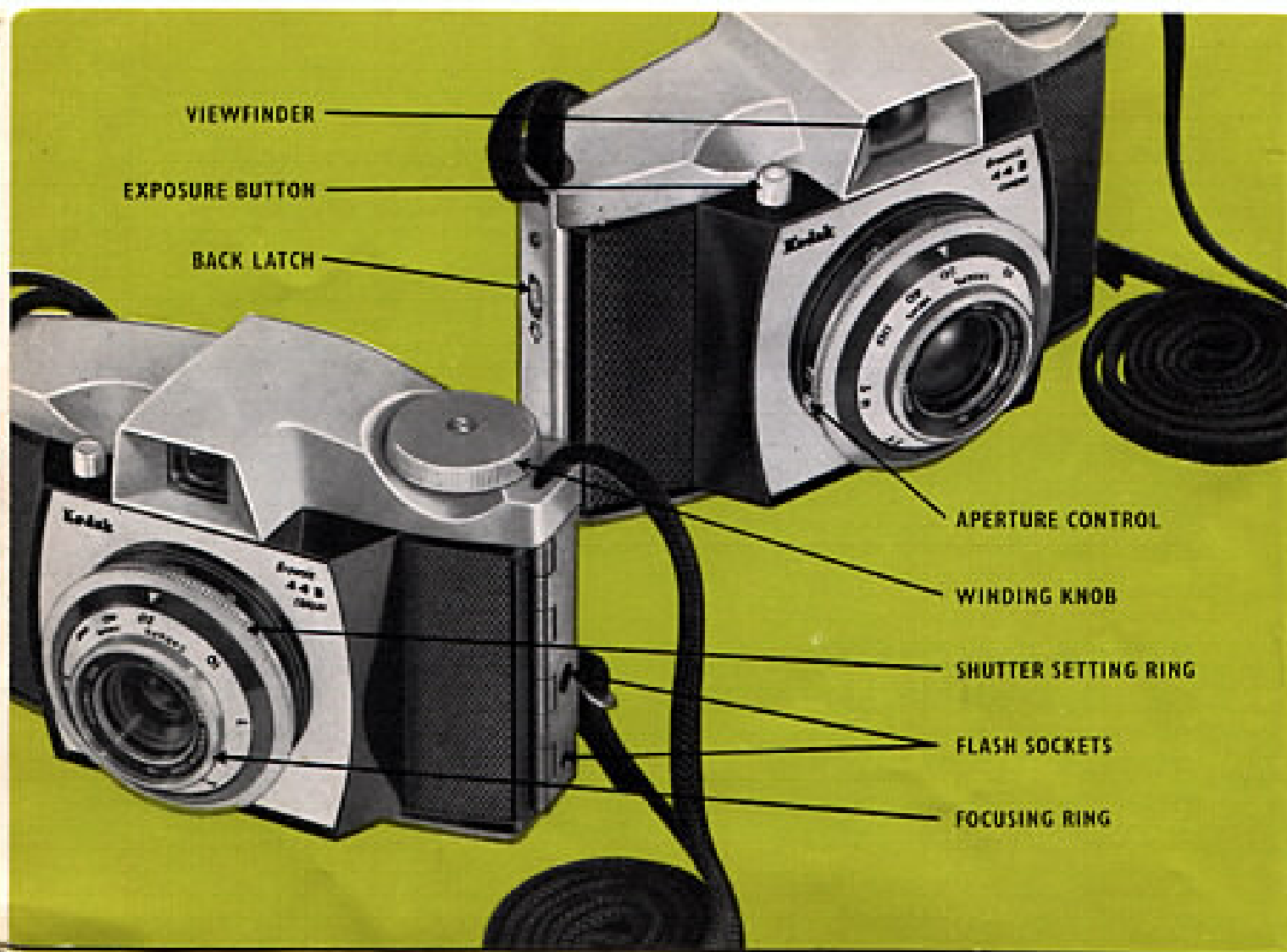
APERTURE CONTROL

WINDING KNOB

SHUTTER SETTING RING

FLASH SOCKETS

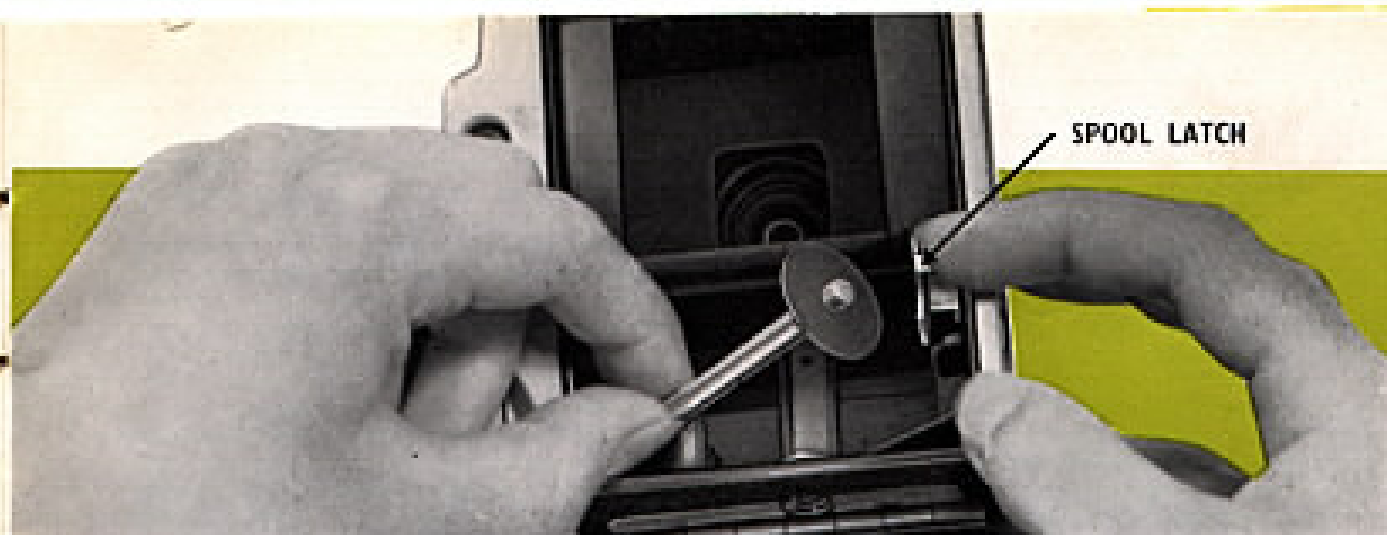
FOCUSING RING



HOLDING THE CAMERA

A neck strap is supplied with your camera. For safety, it should always be worn while using the camera; then, should you lose your grip, the camera cannot fall. Try out the hold shown in the picture. This has been found by experiment to be the best for this camera. With practice, your hands will rest naturally in the position shown. Note how the pressure exerted on the exposure button is balanced by the thumb underneath the camera, and the camera is braced firmly against the cheek. This way, you need never spoil any picture by "camera-shake". Make sure the subject does not appear tilted in the viewfinder. Keep your eye as close as you can to the finder aperture, and see that the picture framed by the front aperture is exactly centred in the rear aperture. You should just be able to see all four edges of the front aperture.





OPENING THE CAMERA

Hold the camera in the left hand with exposure button pointing towards you and back-latch uppermost. Use the thumb of the right hand to push the opening button in the direction of the arrow. The camera back will then swing open. To close: merely push the back shut and maintain pressure until the catch clicks. The back is then locked.



LOADING

1. An empty 127-size spool is supplied with each camera. Before a new film is inserted, this empty spool should be in place in the spool recess underneath the winding knob. To insert the spool, pull up the spool latch, engage one of the slots at either end of the spool with the bar on the winding knob spindle, then push the bottom of the spool into place and lock it in position by means of the spool latch.

2. Break the paper seal on an unexposed roll of 127-sized film, being careful not to let it unroll; remove any loose sealing paper (on some rolls it is possible to remove it all). Still keeping the spool tightly wound, put it into the feed spool recess so that the ends of the spool rest in the slots and the springs bear on the flanges. The shaped paper leader should point across the camera towards the empty take-up spool.

SETTING THE CAMERA

Your camera is provided with three controls for picture taking. These are:—

Shutter setting ring: This sets the time for which the shutter stays open to admit light to the film and is marked 30 for 1/30th second, 60 for 1/60th second and "B" for "Brief Time".

Aperture control: This selects the size of lens opening or “stop” and is marked in “*f*/ numbers”, *f*/8 being the largest, *f*/16 the smallest.

Focusing ring: Correct setting of this control ensures sharp pictures at any distance between 3 feet and infinity.



The way in which these controls should be set is largely a matter of common sense. Obviously, the longer the shutter is open, the more time there is for the subject to move and possibly blur the picture. On the other hand, the light may be so poor that you may need to use a slower speed to give enough time for the light to affect the film. Also, in poor light, your camera "eye" must open wide (large aperture) in order to "see" the subject. In bright light, the camera eye must be closed (smaller aperture) so that the film does not get a brighter image than it can deal with. Focusing merely means setting the distance scale to the distance in feet from the camera lens to the principal feature of the subject. See further notes on "Focusing" (page 13).

Snapshot settings (a short cut to picture-taking)

For the majority of subjects in bright sunshine, and more than 7 ft. away, your camera may be used with "box-camera" simplicity when set as follows.

Snapshot settings for BRIGHT SUN			
FILM	SHUTTER	APERTURE	DISTANCE
'Kodacolor'	1/60	f/11	15 ft
'Ektachrome' Daylight	1/60	f/11	15 ft
'Verichrome-Pan'	1/60	f/16	15 ft

However, for conditions and subjects other than these, it is best to set the camera accurately for each picture (see page 12).



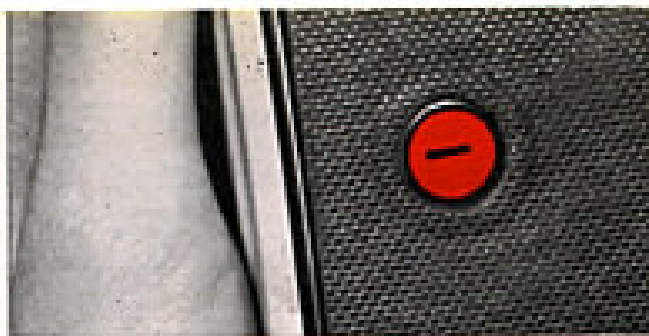
3. Draw the leader paper across the film track, coloured side out, black side towards the lens. Insert the shaped tongue into the longer slot on the take-up spool. See that the tongue protrudes from the shorter slot.

4. Now turn the winding knob (it will turn only one way) several times until the full width of the paper leader lies squarely between the flanges of the take-up spool and the paper is tight on the core. The loaded camera should appear as in the picture. Close the camera back and push it home until the catch clicks. The back is then locked. (Note: If the spool latch is not correctly closed the back cannot be shut without damage). Turn the winding knob, while watching the red window, until the first of a series of dots appears. When you see the dots, slow down. Keep winding slowly until the figure "1" is centred in the red window.

You are now ready to take the first picture (see page 10). After each picture, wind to the next number.

UNLOADING

After you have taken your twelfth picture, turn the winding knob until you see the end of the film pass the red window. Give one or two more turns to ensure that the film is fully wound on to the take-up spool, then open the camera back, as on page 6. Operate the spool latch. This will lift up the full spool so that it can be grasped easily. Keeping the spool tightly wound, lift it out, fold under the end of the backing paper and stick it down with the sticker provided. Take the exposed spool to your Kodak dealer for developing and printing, as soon as possible after unloading.



The light conditions referred to in the table are classified as follows:—

Bright Sun: Sun unobscured by haze or cloud. Sharp-edged shadows.

Hazy Sun: Sun obscured by haze or light cloud. Soft shadows.

Cloudy Bright: Sun hidden behind cloud but can be located by bright area in sky. No shadows.

Dull or Shaded: Sunless weather; or subject in shade, receiving light from open sky (not direct sunlight).

Further notes on FOCUSING

Having set the shutter speed and aperture according to the table, you must now set the distance scale on your camera. Estimate the distance between the lens and subject, and set the focusing ring so that this distance in feet is shown opposite the white triangle. Note that, when a camera is focused for a given distance, objects a little nearer or farther away will also be in focus.

The distance between nearest and farthest sharply rendered objects is known as "depth of field". The table on page 14 shows how this depth varies for different aperture and distance settings.

Daylight settings (for Flash pictures, see page 15)

The table below will assist you to estimate correct settings until you have exposed several rolls of film and have seen and discussed the results. By this time the experience so gained should enable you to estimate settings, without reference to the table, for all but the most unusual subjects.

DAYLIGHT EXPOSURE TABLE (AVERAGE SUBJECTS)										
FILM	IN BRIGHT SUNLIGHT				HAZY SUN		CLOUDY BRIGHT		CLOUDY DULL OR IN SHADE BUT OPEN TO SKY	
	Subjects in normal surroundings	Snow scenes or on white sand								
Shutter	1/60	1/30	1/60	1/30	1/60	1/30	1/60	1/30	1/60	1/30
'Ektachrome'	f/11	f/16	f/16	—	f/8	f/11	—	f/8	—	—
'Kodacolor'	f/11	f/16	f/16	—	f/8	f/11	f/8	f/8	—	f/8
'Panatomic'-X	f/11	f/16	f/16	—	f/8	f/11	f/8	f/8	—	f/8
'Verichrome-Pan'	f/16	—	f/16	—	f/16	—	f/11	f/16	f/8	f/11

For subjects which are liable to move during the exposure, like lively babies or animals, use the higher shutter speed whenever possible (see also note on "moving subjects", page 18).

DEPTH OF FIELD

LENS SET AT	at $f/8$, in focus from to		at $f/11$, in focus from to		at $f/16$, in focus from to	
3 feet	2½ ft	3½ ft	2½ ft	3½ ft	2¼ ft	4¼ ft
3½ feet	3 ft	4½ ft	2¾ ft	4½ ft	2½ ft	5¼ ft
4 feet	3½ ft	5 ft	3½ ft	5½ ft	3 ft	6½ ft
5 feet	4 ft	6½ ft	3¾ ft	7½ ft	3½ ft	9½ ft
7 feet	5½ ft	10½ ft	4½ ft	13 ft	4¼ ft	22 ft
10 feet	6¾ ft	20 ft	6 ft	30 ft	5 ft	Inf.
20 feet	10 ft	Inf.	8½ ft	Inf.	6¾ ft	Inf.
40 feet	13½ ft	Inf.	10¾ ft	Inf.	8 ft	Inf.
Infinity	20 ft	Inf.	14¾ ft	Inf.	10 ft	Inf.

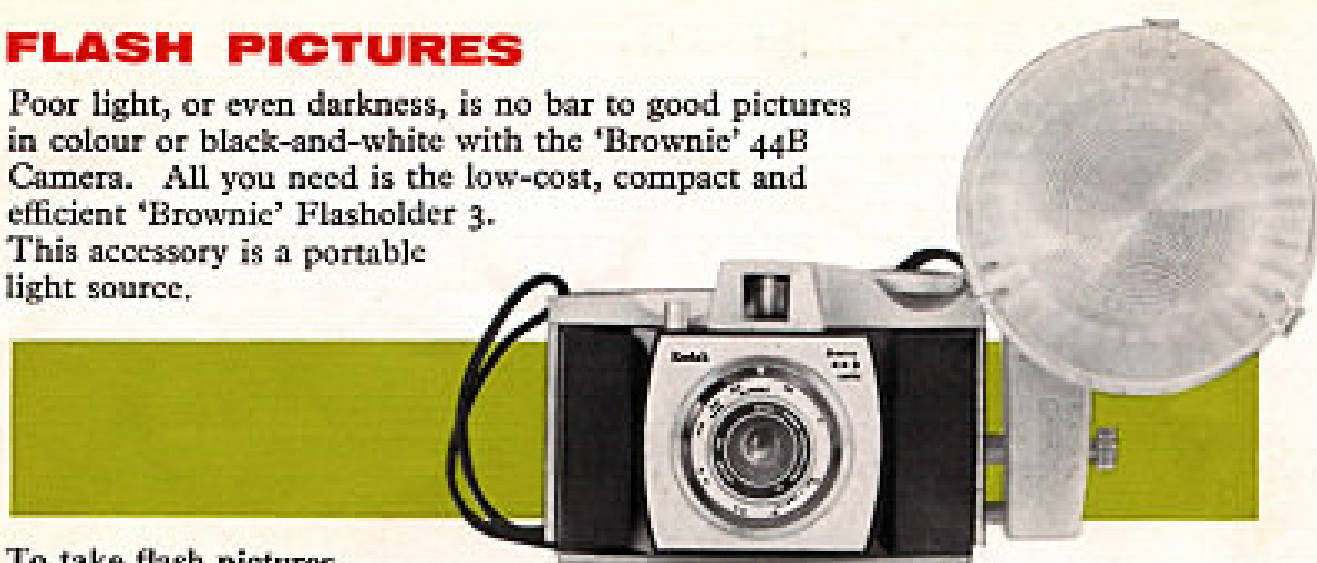
TAKING THE PICTURE

Hold the camera firmly, as on page 5, so that all the desired picture can be seen in the finder. Steady yourself with feet apart, then hold your breath and s-q-u-e-e-z-e the exposure button down as far as it will go. *Note that the button stays down.* This is to prevent accidental "double-exposures" (two pictures superimposed on one piece of the film). The button will re-set itself automatically when you wind on the film for the next picture. Always wind on to the next number after each picture has been taken (see page 9).

FLASH PICTURES

Poor light, or even darkness, is no bar to good pictures in colour or black-and-white with the 'Brownie' 44B Camera. All you need is the low-cost, compact and efficient 'Brownie' Flashholder 3.

This accessory is a portable light source.



To take flash pictures

1. Fit a 'Brownie' Flashholder 3 to your camera, following the simple instructions packed with the Flashholder.
2. Fit a flashbulb. Use a No. 1, PF1, No. 5 or PF5, for black-and-white or for 'Kodacolor' pictures indoors or at night. Use blue-tinted bulbs for daylight-type 'Ektachrome' Film.
3. Consult the table of flash distances and set the lens accordingly.
4. Sight your subject through the viewfinder and s-q-u-e-e-z-e the exposure button. The flashbulb will fire automatically as the picture is taken.

FOR BETTER PICTURES

Hold the camera still. S-q-u-e-e-z-e the exposure button gently and steadily. Do not jerk the camera when you release the shutter.

Pay special attention to the instructions on page 5. Hold the camera straight and level. Judge this from the horizon or vertical buildings.

Make sure that the sun does not shine directly on to the lens. A lens hood is essential for "against the light" photographs.

With distant scenes, include a nearby figure or some object in order to give scale and depth to the picture.

When taking close-up pictures, keep the subject away from the top of the viewfinder, or you may cut off some of the desired picture.

Watch the background. If it is not important, keep it plain. To bring your subject against the sky, hold the camera low, e.g. take the photograph from a kneeling position.

Preferably, take moving subjects approaching or receding rather than passing close in front of you unless you follow the movement by swinging the camera. But, until you are practised, take moving subjects only at a fair distance (30 to 50 yards).

Wind on to the next film number as soon as you have taken a picture.

Keep the lens clear of dust, finger-prints or spray; if necessary, gently wipe with a camel-hair brush or a clean, soft cloth. Dust out the inside of the camera regularly.

Do not use any filter when camera is loaded with colour film.

Accessories

Your Kodak dealer will be happy to show a wide range of accessories to enable you to get the maximum enjoyment out of your camera. Among these, the following will be found very useful.

Filters and close-up lenses

Use size 320 'Kodisk' Lens Attachments. For subjects closer than 3 feet to the camera, slip a 'Kodisk' Close-up Lens (+1) over the lens. *With black-and-white film only*, use a 'Kodisk' Cloud Filter when taking pictures outdoors in sunny weather. This enables white clouds to show up against brilliant blue sky in the final print.

For more dramatic effects with black-and-white films, use a 'Kodisk' Deep Yellow Filter. Your dealer will explain how these can be used to best advantage.

Lens hoods

When taking pictures "against the light" or where there is a possibility that the sun can shine directly into the lens, use a 'Kodisk' Lens Hood.

Flash after dark

For flash pictures after dark, or in very weak artificial light, merely follow the recommendations given in the table, which apply to average size rooms with average furnishings.

FLASH AFTER DARK (Use Shutter Speed 1/30)					
FILM	APERTURE	FLASHBULBS AND DISTANCES			
'EKTACHROME' DAYLIGHT	f/8	BLUE PFI/97*	8 to 10 ft (6-7 ft †)	No. 5B	9 to 12 ft
	f/11		6 to 7 ft (4-5 ft †)		7 to 9 ft
	f/16		4 to 5 ft (3 ft †)		4½ to 6 ft
'KODACOLOR'	f/8	CLEAR PFI or No. 1	6 to 8 ft	PF5 or No. 5	10 to 12 ft
	f/11		4 to 6 ft		7 to 9 ft
	f/16		4 ft		5 to 6 ft
'VERICHROME-PAN'	f/8	CLEAR PFI or No. 1	7 to 20 ft	PF5 or No. 5	10 to 30 ft
	f/11		5 to 15 ft		8 to 24 ft
	f/16		4 to 10 ft		5 to 15 ft
'TRI-X' PAN	f/8	CLEAR PFI or No. 1	10 to 30 ft	PF5 or No. 5	16 to 48 ft
	f/11		8 to 24 ft		12 to 36 ft
	f/16		5 to 15 ft		8 to 24 ft

* This is the more powerful PFI/97 bulb, packed in a *square* red box.

† These figures apply to the less powerful No. 1B bulb.

Flash as an aid to daylight

Where flash is used for colour pictures as an aid to daylight, either outdoors to lighten the shadows of a side-lit or back-lit portrait, or indoors when daylight is present, use *blue-tinted bulbs* (PF1/97* or 5B).

These increased light-output PF1/97* bulbs are packed in the new *square* box. For black-and-white pictures, use clear bulbs.

TABLE FOR FLASH WITH DAYLIGHT: SHUTTER SPEED 1/30					
FILM	APERTURE	FLASHBULBS AND DISTANCES			
'KODACOLOR' or 'EKTACHROME'	f/16	BLUE PF1/97*	7 to 12 ft (6 to 10 ft†)	No. 5B	8 to 14 ft
'VERICHROME-PAN'	f/16	CLEAR PF1 or No. 1	5 to 10 ft	PF5 or No. 5	8 to 15 ft

* This is the more powerful PF1/97 bulb packed in a *square* red box.

† Figures in brackets refer to the No. 1B bulb.

Flash

In low light situations (such as indoors, at a sports arena, stage show, or outdoors at night) the electronic flash will turn on automatically as you press the shutter release to take the picture. After you've taken the picture, the flash will turn off automatically.

- Make sure that your subject is between 1.2 and 5.5 metres (4 and 18 feet) of the camera. However, you can take pictures at indoor sports events, stage shows, etc. and get good results even beyond 5.5 metres (18 feet).
- Sometimes people's eyes appear red in color flash pictures. The red is caused by reflections from the retina of the eye. This effect is especially evident in a young subject who has light complexion and blue eyes, or when your subject is in dimly lighted surroundings. To minimize the problem, you can turn on additional room lights or have your subject look directly at one of the lights, causing the pupils of the subject's eyes to close slightly.

Unloading

After you've taken all 15 exposures, the camera will no longer operate, and the exposure counter will read "X". Open the disc compartment door and remove the disc.

Camera Care

If your camera doesn't work, check the following:

1. Is the disc door lever fully closed? If not, close it.
2. Is the lens cover closed? If so, open it.
3. Have you taken all 15 pictures on the disc? If so, insert a new disc. Then try taking pictures.

If your camera still does not operate, proceed as follows:

1. Remove the disc, close the disc door, and open lens cover.
2. Press the shutter release. The camera motor should run for about 2 seconds. *If it does not*, return the camera to your photo dealer for repair. *If the motor runs*, insert a new disc.
3. Press the shutter release. The camera should operate properly, and the disc should advance to the next frame.
4. If the camera still does not operate, return it to your photo dealer for repair.

CAUTION: This camera contains a high-power energy source. To prevent possible injury, *do not* attempt to disassemble or repair the camera yourself.

Lens Care

- The lens cover should be closed when you are not taking pictures in order to protect the lens and to keep the lens clean.
- Clean both the front and rear surfaces of the lens (1,C; 2,C) by blowing away any dust. If the lens surface still appears dirty, clean as follows:

Wipe the lens surface with a cotton swab moistened with KODAK Lens Cleaner, or equivalent. *Do not* apply pressure or you will scratch the lens. After cleaning, breathe a mist onto the lens surface and lightly wipe the lens with a dry cotton swab.

Troubleshooting Chart

What happened	Probable cause	Solution
Pictures too dark	Lens or flash obstructed	Keep hands, wrist strap, and other objects away from lens and flash.
Flash pictures too dark	Subject too far from camera	Keep subject within 1.2 and 5.5 metres (4 and 18 feet) of the camera.
Flash pictures too light	Subject too close to camera	Keep subject at least 1.2 metres (4 feet) from the camera.

limit any such statutory warranties and other rights and remedies, such provisions shall be deemed to be amended to the extent necessary to comply therewith.

For assistance in using this camera, contact a dealer in Kodak products or one of the Kodak Consumer Centres. For service on this camera, return the camera through a dealer in Kodak products, or one of the Kodak Consumer Centres. Enclosing a note with the camera giving details of the problem and date of purchase will help return the camera promptly.

Kodak Equipment Service Centres

TORONTO

3500 Eglinton Ave. West
Toronto, Ontario M6M 1V3

VANCOUVER

1225 East Keith Rd.
North Vancouver, B.C.

MONTREAL

2, Place du Commerce,
Île des Soeurs
Montréal, Québec H3E 1A1

Subject not centered	Improper use of viewfinder	Frame subject in viewfinder
Blotches in pictures; foggy pictures	Dirty lens	Clean lens (page 6).
Pictures blurred	Subject too close to camera Camera motion	Keep subject at least 1.2 metres (4 feet) from the camera. Hold camera steady.
No picture or partial picture	Lens obstructed	Keep hands, wrist strap, and other objects away from the lens.

Kodak and Kodacolor are trademarks.

Five-Year Warranty

This Kodak camera is warranted by Kodak to function properly for five years from the date of purchase. Kodak makes no other express warranty for this camera.

Carefully read and follow the instructions in the manual to get good results and prevent damage to your camera.

If this Kodak camera does not function properly within five years after purchase, Kodak will repair it without charge. If Kodak is unable to repair it, the option of replacement or refund of the purchase price will be available. These remedies are not available if the camera is damaged by misuse or other circumstances beyond Kodak's control, or if the improper functioning of the camera is caused by failure to follow the care and operating instructions in the manual.

Repair, and the option of replacement or refund in the event that Kodak is unable to repair the camera, are Kodak's only obligations.

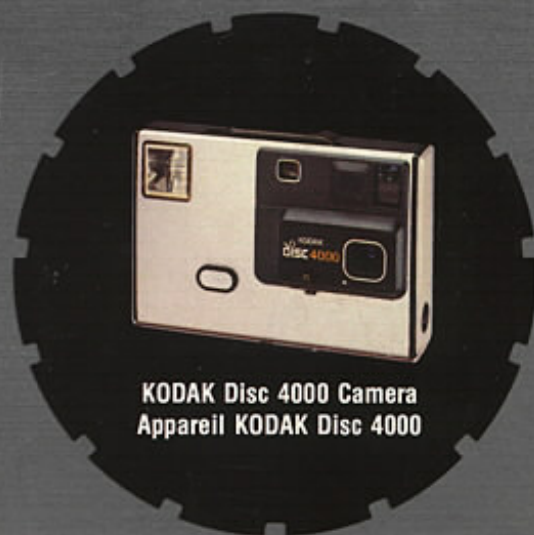
The provisions of this additional written warranty are in addition to, and not a modification of, or subtraction from, the statutory warranties and other rights and remedies in any applicable legislation and to the extent that these provisions purport to disclaim, exclude or



KODAK CANADA INC.
Toronto, Ontario M6M 1V3
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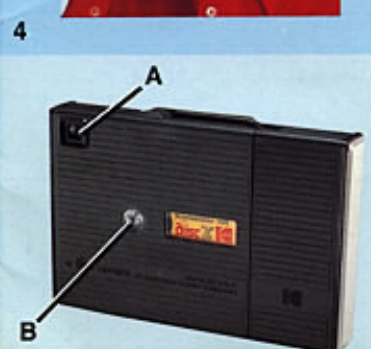
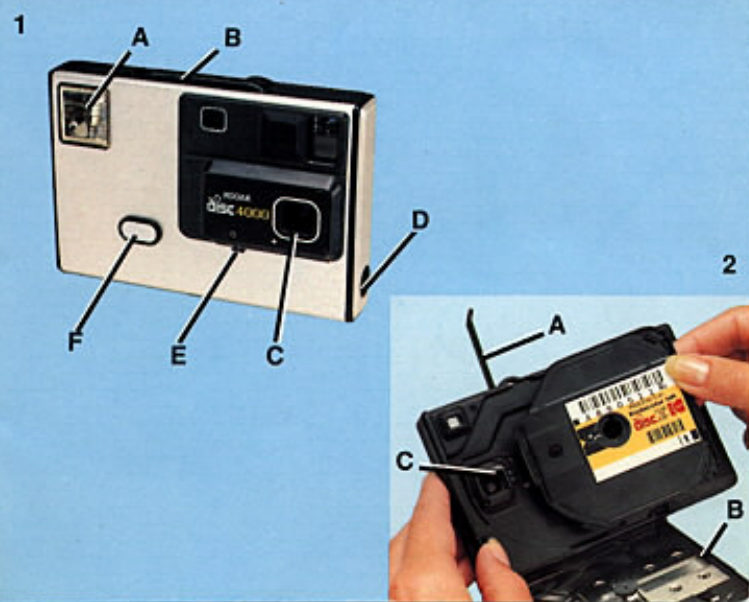
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IN
U.S.A.



KODAK Disc 4000 Camera
Appareil KODAK Disc 4000





ENGLISH

Welcome to the new era in photography! With your new KODAK Disc 4000 Camera, taking pictures is as simple as load, aim, and shoot.

Your camera uses the new KODACOLOR HR Disc Film, and features automatic disc advance, built-in electronic flash that turns on and off automatically, and a protective lens cover.

Equipment subject to minor appearance changes.

Power Source

Your disc camera contains a long life energy source called ULTRALIFE which powers the disc advance, shutter and electronic flash. With proper use, it should last for at least five years. If you should have difficulty with your camera, refer to the sections "Camera Care" and "Troubleshooting Chart".

Wrist Strap

Clip the wrist strap to the POST (1,D) on the end of the camera (see Illustration 1).

Loading

- Lift the DISC DOOR LEVER (1,B) until it is fully opened

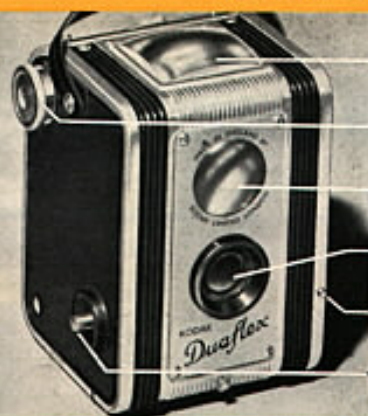
(2,A). The DISC COMPARTMENT DOOR (2,B) will pop open. Insert a disc into the camera (Illustration 2). Close the disc compartment door and snap it shut. Then, push the disc door lever back into place.

Note: If you remove and reinsert a partially used disc one of the picture frames will be lost. For example, if the EXPOSURE COUNTER (4,B) reads frame 8 and you remove the disc, upon reinsertion the camera will automatically advance to frame 9. Frame 8 will have been skipped.

Picture-Taking

- Open the lens cover by sliding the CONTROL (1,E) all the way over to the symbol "O". The disc will *automatically* advance to the first frame, and a "1" will be visible in the exposure counter.
- Hold the camera as shown in Illustration 3. Be sure that the LENS (1,C) and ELECTRONIC FLASH (1,A) are not obstructed by your fingers, the wrist strap, or any other object.
- Frame your subject in the VIEWFINDER (4,A), no closer than 1.2 metres (4 feet). Gently squeeze the SHUTTER RELEASE (1,F) to take the picture. The disc will automatically advance to the next frame.

GET TO KNOW YOUR 'DUAFLEX' AND USE ONLY SIZE 620 FILM



- Viewfinder
- Winding Key
- Viewfinder Lens
- Camera Lens
- Flashholder Stud
- Shutter Release

'VERICHROME' V620

The universal film specially made for the amateur photographer. Its speed and latitude enable you to take snapshots in most daylight conditions.



'SUPER-XX' XX620

A high-speed panchromatic film for indoor and artificial light pictures, for outdoor snapshots in dull weather, and for all photographs taken in poor light.



'PANATOMIC'-X FX620

A medium-speed panchromatic film giving extra-fine-grain negatives particularly suitable for enlarging. 'Panatomic'-X is for bright subjects or sunny days.



- Carrying Handle
- Back Latch
- Shutter-Control Button
- Red Window
- Flashholder Stud
- Flash Contacts



WITH YOUR KODAK 'DUAFLEX' YOU

GET 12 PICTURES ON EACH FILM

ASK TO SEE THESE USEFUL ACCESSORIES

'KODAK' No. 285/320 CLOSE-UP LENS

Enables you to take close-up pictures between $2\frac{1}{2}$ and 4 feet.

'KODAK' 285/320 COLOUR FILTER

Brings out the clouds in your pictures, darkens blue sky, and gives a more faithful monochrome rendering of colours.

CARRYING CASE

Provides your 'Duaflex' with adequate protection from dust, sand, and wet.

KODAK 'DUAFLEX' FLASHHOLDER

Enables you to take pictures in all light conditions, indoors and out.

PN5/33/4RL105451

KODAK AND DUAFLEX ARE TRADE MARKS

PICTURE-MAKING WITH YOUR

Kodak DUAFLEX

CAMERA

MADE IN ENGLAND BY KODAK LIMITED LONDON

HERE'S HOW YOU LOAD YOUR 'DUAFLEX' IN 4 EASY STAGES



1. OPEN THE BACK

Lift the Back Latch; swing open Back. Swing out Feed-spool Holder; remove empty spool. Pull out Winding Key; drop empty spool into Take-up-spool Chamber. Push in and turn Winding Key to engage with slot in spool.



2. INSERT THE FILM

Swing out the Feed-spool Holder. Insert a full spool of 'Kodak' No. 620 film so that the number 620 is on the right side as shown. Make sure that you do not break the seal before fitting the spool, lest the film should unwind.



3. THREAD THE FILM

Slit the paper seal. Thread the end of the paper leader into *longer* slot in Take-up spool. Turn Winding Key once to make sure film winds squarely, then close Back securely. Make sure the printing on backing paper is visible as shown.



4. WIND THE FILM

First you see a hand, then a line of dots. Stop winding when figure 1 is central in the Red Window. Wind to next number immediately after each picture, until 12 have been taken—and then unload as explained on the last page.

ALWAYS LOAD IN THE SHADE — NEVER IN DIRECT SUNLIGHT

AND HERE'S HOW YOU TAKE GOOD SNAPSHOTS RIGHT FROM THE START



Take your snapshots at any time between one hour after sunrise and one hour before sunset. Full sun or cloudy-bright conditions are best; but, on KODAK 'Verichrome' film you can take good snapshots of subjects such as seascapes and beach scenes on quite dull days. For other not-so-bright subjects on dull days, such as pictures of people in the country or in the town, KODAK 'Super-XX' film is a real winner—but do not use 'Super-XX' in bright sun; it is too fast and your negatives would be very dense. To take a snapshot all you do is . . .

- Set the Shutter-control Button at I. (Make sure the button is right at the top of the slot.)
- Hold the camera as shown opposite. Make sure that your fingers do not obstruct the camera lens.

(turn over)

FOR PICTURES CLOSER THAN 7 FEET SEE END OF BOOKLET

FOR SPARKLING SNAPSHOTS USE KODAK 'VERICHROME' FILM ALWAYS

- Aim the camera to include all your picture in the viewfinder.
- Hold the camera quite still, and S-L-O-W-L-Y press the Shutter Release until you hear a click (the click is the shutter opening and closing to take the picture). When you take your finger off the Shutter Release you will hear a second click; this is the shutter returning to the set position and is *not* another picture being taken.
- Wind the film until the next number is central in the red window. *Do this as soon as you have taken the picture* and then there is no fear of the next one being taken on the same piece of film.

If you follow this advice you will take really first-rate snapshots with your 'Duaflex'; but you will be even more satisfied with them if you . . .

- Keep the sun behind or to one side of you, so that the whole of your subject is well

illuminated and so that the sun does not shine directly into the camera lens.

- Make sure that the background is attractive: a hedge, or the open country or beach, is more pleasant than a brick wall, a fence, or a row of washing.
- Make sure that your subject does not move whilst you are taking the snapshot: movement often results in a blurred picture.
- Snap your subject unawares: posed snapshots too often look artificial and wooden.

CLEANING : Keep your camera clean both inside and out. If the fronts of the lenses get dirty, carefully clean them with a soft camel-hair brush and then polish with a clean, well-laundered handkerchief; *slightly* moisten the lens surfaces if necessary by breathing on them—or use a *little* 'Kodak' Lens Cleaning Solution. If grit or dust gets inside the camera body, carefully clean it away with a soft brush. *Do not oil any part of the camera.*

HOLD THE CAMERA QUITE STILL WHILE YOU TAKE YOUR PICTURE

BRIEF-TIME PICTURES

For pictures in poor light, a brief-time exposure is necessary. The length of the exposure depends on the amount of light reflected from the subject, and varies between the quickest brief-time exposure which can be made (for an outdoor picture in very poor light) and some minutes (for a dark interior). With practice you will quickly learn to estimate the correct exposure. To take a brief-time exposure all you do is . . .

- Set the shutter-control button at B.
- Place your 'Duaflex' on a rigid support: *do not hold it in your hands* otherwise your picture will be blurred.



- Steady the camera with one hand, press in the shutter release with the other, count the exposure time, then let go the shutter release. *Keep the camera quite still all the time or your picture will be blurred.*

PHOTOFLOOD PICTURES

Picture-taking indoors with Photoflood Lamps is fascinating and easy. Photoflood lamps can be used in ordinary household lamp sockets, or in 'Kodaflector' Reflectors obtainable from your Kodak Dealer. Photoflood photography is fully explained in a booklet packed with each 'Kodaflector' Reflector, but you will soon be taking first-class indoor pictures if you pay attention to the following simple points . . .

- Set the lamps to light your subject evenly.
- Keep the lamps out of the picture area and do not shine them directly into the camera lens. Shade the lens if necessary.



- You can take snapshots if you set two Photoflood lamps 3 feet from your subject and load with Kodak 'Super-XX' film. If the distance is greater than 3 feet you will need to give a brief-time exposure.

FLASHLIGHT PICTURES ARE AS EASY TO TAKE

You can take flashlight pictures with your 'Duaflex' by simply fitting a Kodak 'Duaflex' Flashholder. All you do is to fix the Flashholder to your camera, fit a flashbulb, stand at the correct distance from your subject and take the picture in the usual way—it's as simple as that. The flash from the S.M. type flashbulb is so quick that you can photograph moving subjects—such as children at play—outdoors at night, and indoors both by day and at night. Of course, you can also take the more usual stationary subjects. When taking flashlight pictures out of doors in daylight your subject must not move quicker than is usual for normal snapshots. A leaflet explaining all you need to know is packed with each Flashholder.



A compact easily-handled unit—'Duaflex' with Flashholder.

Indoors, the flash gives sufficient illumination for most subjects between 7 and 10 feet from the camera, when you use Kodak 'Super-XX' film for your pictures.



. INDOORS

Outdoors, the flash supplements the daylight to give a sparkle in the shadows, and by using Kodak 'Verichrome' film you can take your pictures at about 10 feet.



. AND OUT

CLOSE-UPS ARE REAL FUN!

Why not try your hand at taking close-ups? They are just as easy to take as normal snapshots, and much more interesting to look at. You merely fit a 'Kodak' No. 285/320 Close-up Lens to your 'Duaflex', stand between $2\frac{1}{2}$ and 4 feet from your subject, and take the picture in the usual way. Full details are contained in the instruction sheet packed with each 'Kodak' Close-up Lens. It is best not to tilt your camera too much when taking close-ups: keep your 'Duaflex' as square to your subject as you can, otherwise the picture may appear distorted. Do not forget to take the Close-up Lens off before taking ordinary snapshots again.



Happy close-ups like this are the treasures of your collection.

UNLOAD IN THE SHADE

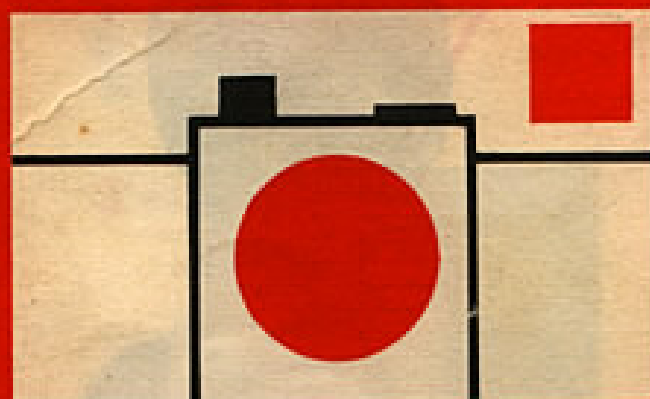
As soon as you have taken the twelfth exposure, wind on the film, watching the red window carefully. When you see the tapered end of the backing paper go by—and not before that . . .

- Open the Back.
- Pull out the Winding Key.
- Cover the film with the palm of your hand and turn the camera over so that the film drops from its chamber into your hand. *Make sure that it does not unwind.*
- Fold under the end of the backing paper and seal with the paper sticker. Do not try to pull the film tight on the spool by tugging at the end of the backing paper: this may cause scratches on your pictures.
- Hand the film to your Kodak dealer for developing and printing without delay. Ask him about his 'En-print' service: 'En-prints' are $3\frac{1}{2} \times 3\frac{1}{2}$ -inch enlargements at economical prices.

. NEVER IN DIRECT SUN

KODAK

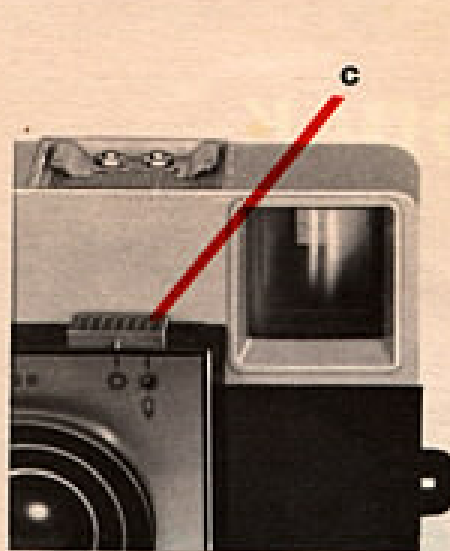
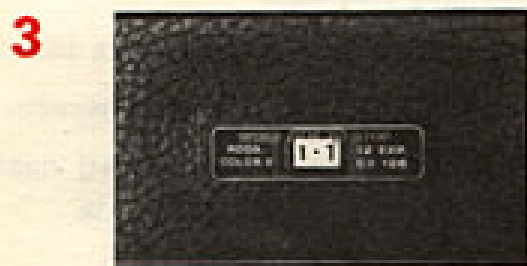
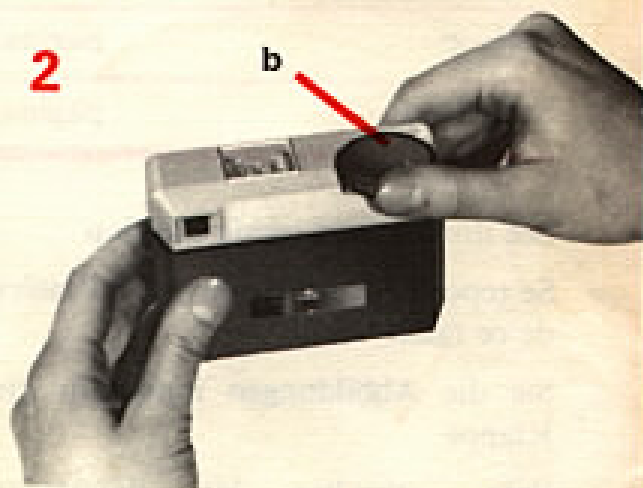
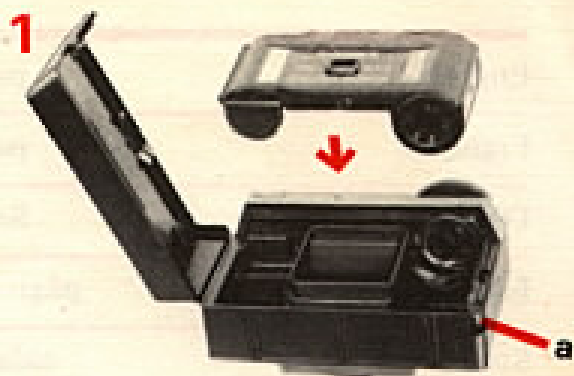
**INSTAMATIC
25 CAMERA**



*Kodak and product names quoted thus-
'Instamatic'-are trade marks*

KODAK LIMITED LONDON

Printed in England 5/125/11P D794/bxG250/1-67.



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See illustrations inside this flap

Se reporter aux illustrations à l'intérieur de ce rabat

Sie die Abbildungen innerhalb dieser Klappe

Para consultar las ilustraciones, despliegue esta tapa

Se illustrationer på omslagets innersida

Vedi illustrazioni in questo risvolto

Voor illustraties verwijzen wij naar de binnenzijde van de frontpagina

English

KODAK FILMS

Ask your dealer for 'Kodak' Film in 126 film cartridges.

Colour slides for projectors or viewers—use 'Kodachrome-X' or 'Ektachrome-X' Film.

Colour prints for wallet or album—use 'Kodacolor-X' Film.

Black-and-white prints—use 'Verichrome' Pan Film.

When you first get your camera, practice taking pictures outdoors (and indoors with flash) before taking any important pictures.

Your pictures cannot be spoiled by double exposures; once the shutter release has been pressed, it will not operate again until you have wound on *fully* to the next exposure.

NOTE: Colour transparencies can be made from pictures you have taken on 'Kodacolor-X' Film, and colour prints can be made from your transparencies taken on 'Kodachrome-X' or 'Ektachrome-X' Films.

HINTS AND TIPS

- Use a 'Kodak' Carrying Case, Code 940 to protect your camera.
 - Use a 'Kodisk' Haze Filter for colour slides of sea, snow and distant views.
 - Use a 'Kodisk' Cloud Filter to emphasize white clouds in a blue sky, *with 'Verichrome' Pan Film only.*
 - Use a 'Kodisk' Close-up Lens for close-ups between 21 inches and 48 inches.
 - For pictures against the light, shade the lens with a 'Kodisk' Lens Hood.
- Use 'Kodisk' Lens Attachments No 320.

GUARANTEE (Applies in the U.K. only)

This camera or parts thereof will be repaired free of charge, or at our option replaced, within ONE YEAR after purchase if defects are due to our faulty workmanship or materials. Batteries and lamps, which have a limited life, are excluded from this guarantee.

All other warranties or conditions are excluded and responsibility will not be accepted for consequential loss or damage, however caused.

In the event of unsatisfactory operation the camera should be sent direct or through a Kodak Dealer to Kodak Limited, Equipment Services, Stevenage, Hertfordshire, with details of the trouble met and date and place of purchase.

Kodak Limited London

Enter date of purchase here.

LOADING AND UNLOADING

- Push up the latch button (a) fully, and open the camera back (Figure 1).
- Drop in a 126 film cartridge. It will only fit one way.
- Press camera back fully closed—it will latch automatically.
- Operate the film winder (b) with a back-and-forth action of the thumb (Figure 2), *until the mechanism locks.*

You are now ready for the first picture.

After each picture, operate the film winder until it locks.

After the last picture has been taken:

Wind until all the yellow paper has been wound past the window. THEN open the camera and remove the cartridge for processing.

Have exposed films processed as soon as possible.

Removing and replacing partially-used cartridges (even in a darkroom) is not recommended as it may result in loss of one or more pictures.

OUTDOOR PICTURES



With the subject in bright or hazy sun, slide the speed lever (c) (Figure 4) to this symbol (*nominal shutter speed 1/90th second*).



If cloudy but bright, slide the speed lever to this symbol (*nominal shutter speed 1/40th second*).

- Keep at least 4 feet from your subject. Make sure the lens is not obstructed (with fingers or strap).
 - View the scene with your eye close to the rear viewfinder opening.
 - Hold the camera still and press shutter release (d) *steadily* all the way down to take the picture (Fig. 5). Do not jerk the camera.
 - Operate the film winder until it locks—you are ready for the next picture.
- When winding on, disregard the number in the window (Fig. 3). This number (there may be two) serves only as an exposure counter.

Always wind until mechanism locks.

FLASH PICTURES



Pictures indoors by flash are as easy to take as pictures in daylight. Ask your dealer to show you the accessory flashholder, designed by Kodak to fit your camera. The flashholder instructions contain all you need to know for successful flash pictures.

YOU LOAD INSTANTLY!



**KODAK
INSTAMATIC
100
CAMERA**

Instamatic and product names quoted thus – 'Kodak' – are trade marks

KODAK LIMITED LONDON

Printed in England

5/111/16 RL180364(228/x)

KODAK
INSTAMATIC
100
Camera

Your new KODAK 'INSTAMATIC' 100 Camera is feature-packed to give you *instant, effortless picture-taking* by daylight or built-in "pop-up" flash.

Simply do this . . .

- Drop in a 'Kodapak' Cartridge – camera is loaded.
- Operate film advance lever until it locks – first exposure is ready.
- Aim through eye-level finder – you see a bright, clear image of your subject.
- Press the shutter release – you've snapped the picture.

. . . read on for the important details



Full-colour $3\frac{1}{2} \times 3\frac{1}{2}$ -inch (9 × 9 cm) colour prints like that shown here (reduced size), are available from your 'Kodacolor-X' Film.

When you first get your camera, it's a good idea to take some pictures outdoors, and indoors with flash. This will give you practice before you set out to take important pictures.

NOTE: *You cannot operate the shutter release without a 'Kodapak' Cartridge in the camera.*

FILMS

Your camera accepts 'Kodak' No. 126 Film in the 'Kodapak' Cartridge for instant loading and unloading.

You can have black-and-white prints, colour prints or colour slides, depending on which of the following 'Kodak' Films you choose.

'Verichrome' Pan Film - for 12 black-and-white prints. Standard $3\frac{1}{2} \times 3\frac{1}{2}$ -inch (9×9 cm) black-and-white prints can be made from your 28×28 mm negatives; order prints from your Kodak dealer.

'Kodacolor-X' Film - for 12 colour prints. Standard $3\frac{1}{2} \times 3\frac{1}{2}$ -inch (9×9 cm) colour prints (like that shown in reduced size on page 3), or even greater enlargements, can

be made from your 28×28 mm negatives.
See your Kodak dealer for more details.

'Kodachrome-X' Film - for 20 colour slides.
Post exposed film direct to Kodak Limited.
Your colour slides will be returned to you
mounted in 2×2 -inch (5×5 cm) cardboard
mounts, ready for projection.

'Ektachrome-X' Film - for 20 colour slides.
Colour slides, mounted in standard 2×2 -
inch (5×5 cm) cardboard mounts, are for
showing in slide projectors. Exposed
'Ektachrome-X' Film may be taken to any
Kodak dealer for processing.

*Ask your dealer to show you the range of
'Kodak' Projectors*

NOTE: Although
'Kodacolor-X' Film is
primarily for colour prints,
and 'Kodachrome-X' and
'Ektachrome-X' Films
for colour slides,
nevertheless colour slides
can be made from
'Kodacolor-X' negatives
and colour prints made
from 'Kodachrome-X'
and 'Ektachrome-X' slides.

SHUTTER RELEASE



OUTDOOR PICTURES

- Keep the sun behind you. Your subject should be in bright or hazy sunlight. If cloudy, but bright, see note on page 11.
- Keep at least 4 feet (1.2 m) from your subject for sharp pictures.
- View the picture with your eye close to the rear opening of the viewfinder, as shown.
- Hold the camera steady and take the picture by *slowly* pressing down the SHUTTER RELEASE all the way.
- Operate the film advance lever until it locks (1½ to 2 strokes).

You are ready for the next exposure.

NOTE: Your pictures cannot be spoiled by "double exposures". After taking a picture, the shutter release is locked until the film is advanced.



LOADING

1

Open the back of the camera by sliding up the LOCK button and swinging out the hinged cover.



2

Place a 'Kodapak' Cartridge in the camera with the larger cylindrical end **down** and toward the lock button, as illustrated.



3

Close the camera by pressing the back against the camera body until it locks. The film name and number of exposures per cartridge appear in the WINDOW on the back of the camera.



4

Push the FILM ADVANCE lever toward the front of the camera and allow it to return (you may need to push the lever firmly, the first time). Repeat until the lever locks—about a dozen full strokes (as the film advances, a series of arrows appears in the window). You are now ready for the first picture. After each picture, operate the film advance *until it locks* (1½ to 2 strokes).



The number that appears in the window on the back of the camera (shown left) serves as your exposure counter. One or two of the same numbers may appear, as shown.

UNLOADING

1. After the last picture, operate the film advance lever until all the yellow paper has been wound past the window (an "X" in the window indicates that the backing paper has not been fully wound into the take-up chamber).

2. Slide up the lock button and open the back of the camera.

3. Lift out the used cartridge and re-load with a fresh one.

NOTE: Partially used cartridges cannot be interchanged or removed from the camera except in a darkroom. Therefore, do not open the back of the camera after loading until the yellow paper has been wound past the window. Otherwise, some of the pictures will be spoiled by "light-fogging".

FLASH PICTURES

Films, Flashbulbs and Distances—Pictures indoors by flash are as easy to take as outdoor shots. Just be sure to use the correct bulb (clear or blue) for the film loaded in the camera, and observe the recommended camera-to-subject distance ranges as given below. For handy reference, distance ranges are shown on the back of the Flashholder.

- For colour slides indoors, use 'Kodachrome-X' or 'Ektachrome-X' Film and AG-1B (blue) bulbs. The camera-to-subject distance must be between 4 and 7 feet (1.2–2 m).
- For colour prints indoors, use 'Kodacolor-X' Film and AG-1 (clear) bulbs. Camera-to-subject distance must be between 4 and 10 feet (1.2–3 m).
- For black-and-white prints, indoors, use 'Verichrome' Pan Film and AG-1 (clear) bulbs. The camera-to-subject distance must be between 4 and 10 feet (1.2–3 m).



Flash Batteries: Two leak-proof batteries, size AAA, such as manganese-alkaline batteries Mallory Mn-2400, are required. To install batteries, first open the battery compartment at the bottom of the camera, as shown left, by sliding the raised R18 of the battery cover to the opposite end of the recess. Insert the batteries – one base *down*, the other base *up* – as illustrated. Press down the batteries while sliding the cover back to close the compartment. *The cover must be all the way back to complete the electrical circuit.*



Taking Flash Pictures

1

To raise the Flashholder, first press the RELEASE BAR to "pop-up" the Flashholder slightly; then grasp the Flashholder and raise it into the picture-taking position. The Flashholder *must be all the way up* to make electrical contact.

NOTE: With the Flashholder *all the way up*, the shutter speed is automatically set to a nominal 1/40 second; with the Flashholder down, to a nominal 1/90 second. To permit acceptable exposure of outdoor pictures under less favourable light conditions than recommended on page 8 (i.e. when cloudy, but bright), raise the Flashholder (remember to remove the bulb if one is fitted) to obtain the slower shutter speed.

RELEASE BAR

2



CONTACTS

EJECTOR

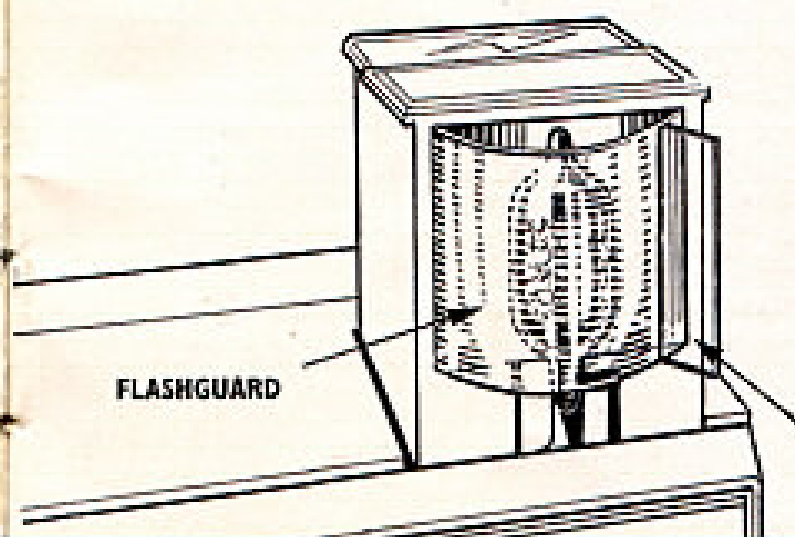
Insert an AG-type flashbulb by sliding the narrow edge of the glass base in between the Flashholder CONTACTS and pressing it back against the ejector finger until it is locked in place. To release a bulb, press the bulb EJECTOR as far as it will go toward the centre of the camera. Do not touch bulbs during or after firing – they will be extremely hot.

NOTE: A fresh bulb can remain in the Flashholder without firing when the Flashholder is retracted into the body. Therefore, you can always be ready for a quick flash shot – simply raise the Flashholder all the way and shoot.

3

A transparent plastic FLASHGUARD is packed with the camera. When taking close-ups and groups, the use of the Flashguard is recommended. Never take flash pictures in an explosive atmosphere.

After inserting a flashbulb, hold the Flashguard by the raised TAB, and, as illustrated, seat one narrow end inside the left frame, flex the Flashguard slightly; then seat the opposite narrow end inside the right frame. Remove the Flashguard before ejecting the bulb or retracting the Flashholder.



TAB

4

The distance from the flashbulb to the subject is important for correctly exposed pictures. Therefore, make sure that the subject is not closer than 4 feet (1.2 m), and not farther away than 7 feet (2 m) with *blue* bulbs or farther than 10 feet (3 m) with *clear* bulbs.

NOTE: The most pleasing appearance of the subject's eyes will result when the flash picture is taken in a brightly lighted room, and the subject is not looking directly at the camera.

5

View the picture with your eye close to the rear opening of the viewfinder, and slowly press the shutter release to flash the bulb and take the picture.

IMPORTANT TIPS

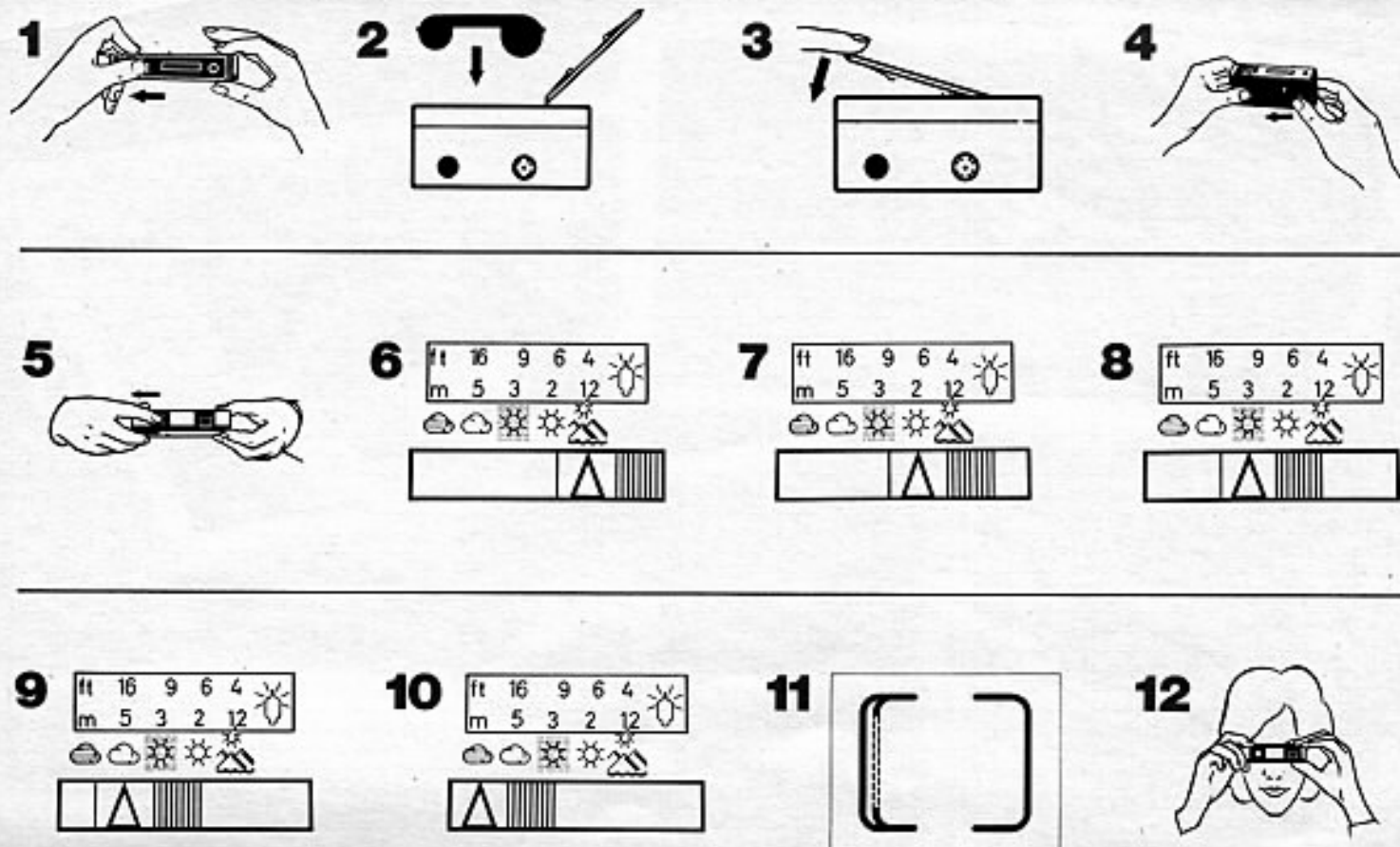
- Keep at least 4 feet (1.2 m) from your subject, hold the camera steady and don't obstruct the lens (with fingers, case or strap).
- Keep the camera lens and viewfinder clean. Dust with a well-washed handkerchief, or, if necessary, use 'Kodak' Lens Cleaner.
- Protect your camera with the 'Kodak' Ever-Ready Case (Code 792) and always use the wrist strap when taking pictures.
- For colour slides of distant views, sea and snow pictures, use a 'Kodisk' Haze Filter.
- To emphasize white clouds in a blue sky, with 'Verichrome' Pan Film *only*, use a 'Kodisk' Cloud Filter.
- For close-ups between 21 in (.54 m) and 48 in (1.2 m) use a 'Kodisk' Close-up Lens.

Use 'Kodisk' Lens Attachments No. 285

A close-up photograph of a woman's face, focusing on her eyes and mouth. She is holding a silver and black Kodak Instamatic 300 camera horizontally across her face, with the lens positioned over her right eye. Her hands are visible, holding the camera. The background is a soft, out-of-focus brown. The text 'Kodak pocket INSTAMATIC 300 camera' is overlaid on the left side of the image.

Kodak
pocket
INSTAMATIC
300
camera





ENGLISH

Films

Use Kodak Film in 110 cartridges (Image size 13 x 17 mm): 'Kodacolor' II Film (12 and 20 exp) for colour prints, 'Kodachrome-X' Film (20 exp) and KODAK 'Ektachrome-X' Film (20 exp) for colour slides for projection and KODAK 'Verichrome' Pan Film (12 exp) for black-and-white prints.

Get to know your camera by trying out the following simple operations.

Loading the camera

Open the camera-back, by pushing it in the direction of the arrow 1. The camera-back will spring open. Drop in the cartridge 2 and close the back 3. Without touching the shutter release, operate the film wind-on slider 4, on the underside of the camera repeatedly until it locks.

Pictures outdoors

Fully open the sliding lens cover, until it latches 5. Set the weather symbol as follows:

Bright sun on light sand or snow 6
Bright sun (distinct shadows) 7
Weak hazy sun (soft shadows) 8
Cloudy bright (no shadows) 9
Cloudy dull, or pictures in shade 10.

In bright sun the camera must be at least 1.2 m (4 feet) from the subject, in other weather conditions at least 2 m (6 feet).

When taking pictures at a distance less than 1.8 m (6 feet) frame your subject within the imaginary line (dotted in the illustration) between the two small marks in the viewfinder, because the photograph will be slightly to the right of the normal frame boundaries 11.

Avoid the sun shining into the lens 13, except when taking pictures of the sunrise or sunset.

Hold the camera close to the eye 12. Keep the important parts of your subject well away from the edges of

the brightline frame in the viewfinder 13 and be sure that the lens is not obstructed by your hand or other object 14. **Take the picture without jerking the camera.**

For the next exposure, operate the film wind-on slider until it locks ($1\frac{1}{2}$ —2 actions) without touching the shutter release 4.

After using your camera, close the sliding cover over the lens 5. It protects the lens and acts as a shutter release safety catch. The frame number of each exposure, and the film which you have loaded, show in the camera-back window 15.

Flash pictures

Use only a magicube for flash picture-taking. Any other cube will damage your equipment.

Sometimes your subjects' eyes may appear red in colour flash pictures. Inserting the **KODAK MAGICUBE**

EXTENDER 16 in the camera raises the cube to minimize the red reflections for more pleasing results.

Set the camera-to-subject distance, which should be between 1.2 m (4 feet) and 5 m (16 feet), on the flash scale **17** and take the picture. Use inner frame marks for subjects less than 1.8 m (6 feet) from the camera **11**.

One magicube gives four flash pictures. As the film is wound on, the extender turns automatically, and must not be obstructed. A partly used magicube may be removed and re-used later.

A warning signal appears in the viewfinder if a used bulb faces forwards **18**. When inserting a partly-used magicube, ensure that an unfired bulb will face forwards when the film has been wound on. If necessary, rotate the extender by hand, clockwise only, to the correct position.

Unloading the camera

After the last exposure, operate the wind-on slider repeatedly until it locks **19**. **Do not force the advance any further!** Open the camera-back **1**. To remove the cartridge invert the camera and gently tap it against the palm of your hand until the cartridge falls out **20**. Send the film cartridge for processing as soon as possible.

Carrying strap

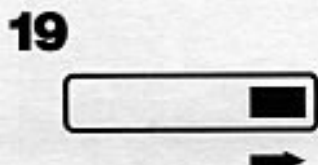
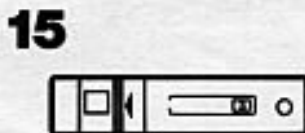
Pull the eyelet from its recess. Thread the strap downwards through the eyelet, and, passing it through its own loop, pull it tight to form the carrying strap **21**.

General tips

We recommend the KODAK Pocket 'Retinamat' 210 and 610 Projectors for showing your 30 x 30 mm slides.

9 x 11.5 cm (3 1/2 x 4 1/2 inch) and 13 x 18 cm (5 x 7 inch) colour prints can be made from your 'Kodacolor' II negatives.

Ask your photographic dealer for details. He will also be able to show you the Kodak Case designed for your camera.



Kodak
pocket
INSTAMATIC
400
camera



Kodak
pocket
INSTAMATIC
400
camera



ENGLISH

Read these instructions carefully before using your camera.

Note

The sliding lens cover (A) protects the lens (B) from dust and abrasions while the camera is not in use. When the lens cover is closed the shutter release cannot be depressed and accidental exposures are prevented. So remember to open the lens cover fully, until it latches, before taking a picture, and to close it when not taking pictures.

Inserting and testing the battery

Open the battery compartment door (I) by pushing it in the direction of the arrow. Insert a battery (N) (Mallory 7H34, Union Carbide 537 or Varta 7250) with the + pole uppermost.

Without a battery, the camera will not work whether in daylight or with flash, since the shutter will open but will not close until the film is wound on.

Check the battery when it is first fitted, at regular intervals and when the camera has not been used for some time. To check the battery, operate the wind-on slider (O). Fully open the sliding lens cover (A) and cover the electric eye (C) while slightly depressing the shutter release (D). If the battery and electronic system are working satisfactorily, a yellow light (S) will appear in the viewfinder (J) and on top of the camera (E). If no light appears, clean the battery contacts. If this fails, fit a new battery.

Loading the camera

Open the camera back (K) by briefly pressing the circular mark (M) whilst pushing the camera back (K) in the direction of the arrow. Drop in the film cartridge

(P) and close the camera. **Keeping fingers clear of the shutter release (D)**, repeatedly move the film wind-on slider (O) as far as possible until it locks.

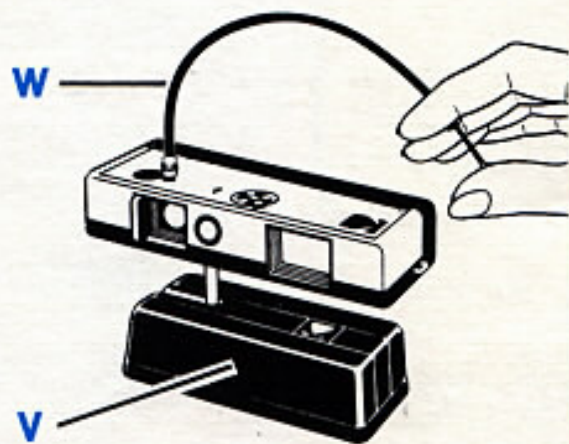
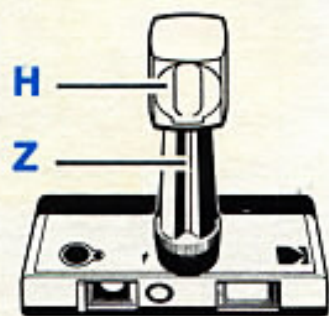
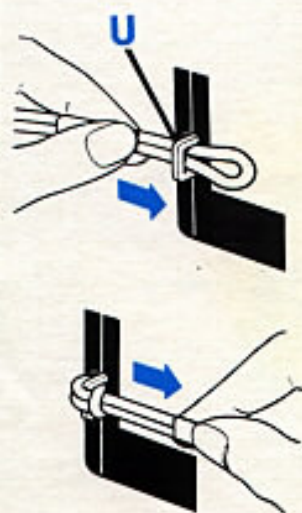
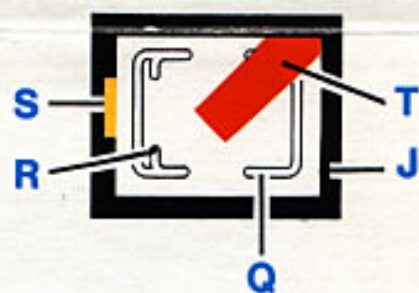
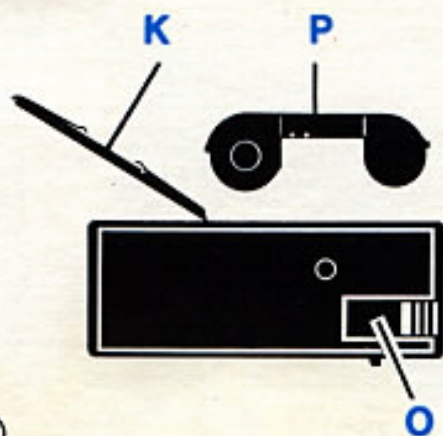
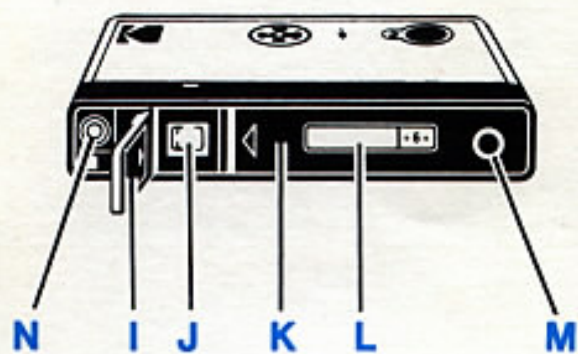
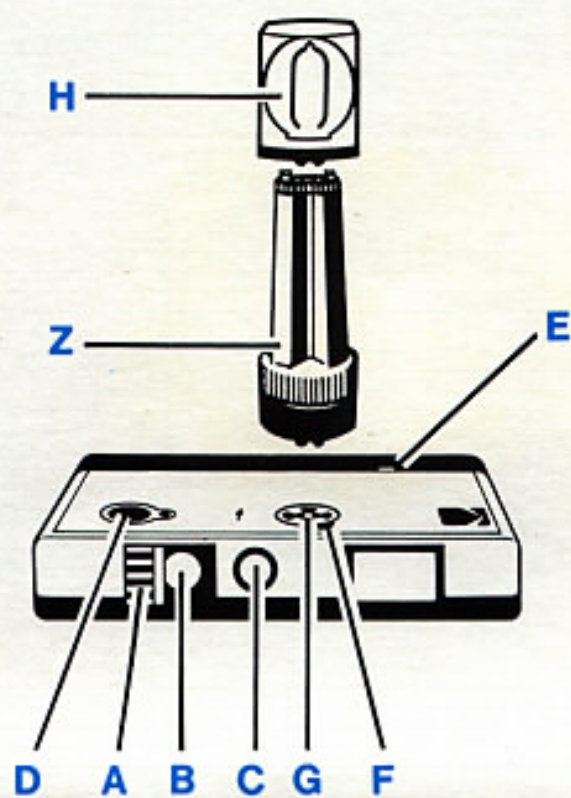
Taking pictures

Open the sliding lens cover (A) until it latches, so freeing the shutter release safety catch. Follow the instructions for "Pictures outdoors", "Time exposures" or "Flash pictures", according to the lighting conditions. Hold the camera close to the eye, framing the subject within the bright lines (Q) of the viewfinder (J). Use the inner frame marks (R) for subjects less than 1.8 m (6 feet) from the camera.

To take a picture, make sure that the lens is not obstructed by a hand or other object and press the shutter release (D) without jerking the camera. **Without touching the shutter release (D)** operate the wind-on slider (O) until it locks (1½–2 strokes). The frame number of each exposure and the type of film appear in the camera back window (L).

Pictures outdoors

The camera has an electric eye (C) which, in conjunction with the electronic shutter, automatically sets the exposure time between 1/300 and 20 seconds, according





Kodak

Retinette IB

Kodak

K O D A K A G · S T U T T G A R T - W A N G E N

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to the light conditions. The electric eye must never be obstructed during the exposure. Light shining directly into the lens (B) and electric eye (C) may cause incorrect exposure, so avoid it except when taking pictures of such subjects as the sunrise or sunset.

The subject should be at least 1.2 m (4 feet) from the camera. Before taking a picture, press lightly on the shutter release (D). If no light appears in the viewfinder or on top of the camera, take a picture by pressing the button smoothly down without jerking the camera. If a yellow light does appear at this stage, see "Time exposures" or "Flash pictures". A yellow light appearing after pressing the shutter release indicates the functioning of the battery and the end of the exposure.

Time exposures

If a light appears in the viewfinder (J) and on the top of the camera (E) when the shutter release (D) is first lightly pressed, the automatically set exposure time will be longer than 1/30 second. To avoid camera movement during the exposure, place the camera on a firm support or fit it to the KODAK Compact Camera Stand, Model 2 (V) and use a cable release (W). If necessary, hold it firmly when releasing the shutter. If the shutter release is kept

depressed, the yellow light (S) will reappear when the shutter closes. If the exposure has not ended automatically after about 20 seconds, the correct exposure time must be calculated independently of the camera, and the shutter closed by pressing the plunger (G) in the centre of the magicube socket (F). If the subject is within the flash distance, a flash picture may be more suitable than a long time exposure, particularly when the subject is in motion.

Flash pictures

Use only a magicube for flash picture-taking. Any other cube will damage your equipment.

The KODAK Magicube Extender, supplied with the camera, will help prevent the red reflections that sometimes appear in your subjects' eyes in colour flash pictures.

Insert the extender (Z) in the camera and a magicube (H), with a fresh bulb facing forward, in the extender. This automatically sets the camera for flash pictures.

The subject should be between 1.2 m (4 feet) and 2.7 m (9 feet) from the camera when taking the picture.

For flash pictures of subjects other than people or animals, you may insert the

magicube in the camera without using the extender.

One magicube gives four flash pictures. As the film is wound on, the extender automatically turns, bringing a fresh bulb into the firing position. **Do not obstruct the free rotation of the extender.**

A warning signal (T) appears in the viewfinder if a used bulb faces forwards. This may happen when a partly-used magicube is inserted, so check that an unfired bulb faces forwards when the film has been wound on. If necessary, rotate the extender by hand, clockwise only, to the correct position.

Unloading the camera

After the last exposure, operate the wind-on slider repeatedly until it locks. Open the camera back (K). To remove the cartridge, invert the camera and gently tap it against the palm of your hand until the cartridge falls out. Send the film cartridge for processing as soon as possible.

Carrying strap

Pull the eyelet from its recess in the camera body (U). Thread the strap through the eyelet and, passing it through its own loop, pull it tight to form the carrying strap.

2

Film

Use KODAK Film in 110 cartridges. "Kodachrome" II Film for colour prints. KODAK "Verichrome" Pan Film for black-and-white prints. "Kodachrome-X" or KODAK "Ektachrome-X" Film, for colour slides. For best results, these slides, which are returned from processing in 30 x 30mm mounts, should be shown in projectors designed for the 110 format, e.g. KODAK pocket "Retinamat" projectors. They can only be shown in 2 x 2 inch projectors by remounting in 2 x 2 inch mounts or using adapter mounts.

Always keep the protective lens cover closed and use the accessory KODAK pocket "Instamatic" Camera Case when the camera is not in use. Never leave the camera in a hot place, e.g. in direct sunlight, or on the back shelf of a car.

GUARANTEE

Applies in the United Kingdom and Republic of Ireland only

This camera, or parts thereof, will be repaired free of charge, or at our option replaced, if found defective or faulty in manufacture.

In the event of unsatisfactory operation the camera should be sent, **WITH THIS GUARANTEE**, to KODAK LIMITED, Amateur Equipment Services, Caxton Way, Stevenage, Hertfordshire, SG1 2DJ, with details of the trouble encountered and the date and place of purchase.

Customers in the REPUBLIC OF IRELAND should return the camera **AND GUARANTEE** to Kodak Limited, Kodak House, Rathmines, Dublin 6.

Date of Purchase

Purchased from:.....

3

Kodak

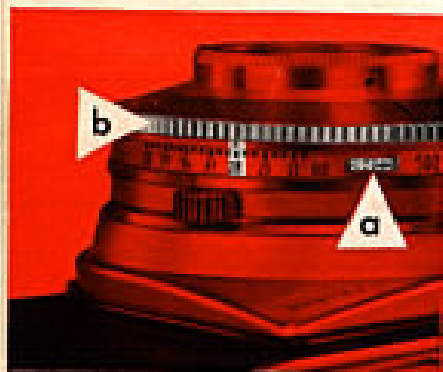




**You will never miss a shot
like this with the RETINETTE 1 B**

**Set shutter speed
Set focus zone
Centre pointer in finder
Sight and shoot**

Presetting the Film Speed



For correct exposure, you must set your camera to the speed of the film in use. Film speeds in both ASA and BS numbers are marked in red on the shutter ring.

Press the setting key (a) and turn the shutter ring (b) until the red dot points exactly to the relevant ASA or BS number. The picture shows the camera set for a film speed of 28° BS.

On the opposite page, some Kodak films are listed.

Experts Choose Kodak Films

		ASA	BS
Colour Films	Kodachrome Daylight Type Film	10	21°
	Kodachrome Type A Film	16	23°
	Ektachrome Daylight Type Film	32	26°
	Kodacolor Negative Film	32	26°
Black-and-white Films	Panatomic-X	25	25°
	Plus-X Pan	80	30°
	Tri-X Pan	200	34°

Selecting the Shutter Speed



The black figures on the shutter ring (b) indicate fractions of one second. The figure 15, for instance, stands for $\frac{1}{15}$ sec., 30 = $\frac{1}{30}$ sec., 60 = $\frac{1}{60}$ sec., etc. The letter B identifies the shutter setting for time exposures. Turn to page 18 for more information.

Turn the shutter ring (b) until the shutter speed of your choice clicks into place opposite the black dot. The illustration left shows the shutter speed set at $\frac{1}{60}$ sec.

Appreciable resistance has to be overcome between $\frac{1}{30}$ and $\frac{1}{15}$ sec. This is to tell you that for taking pictures at $\frac{1}{15}$ sec. and B the camera should be placed on a tripod to prevent blurred pictures as a result of camera movement.

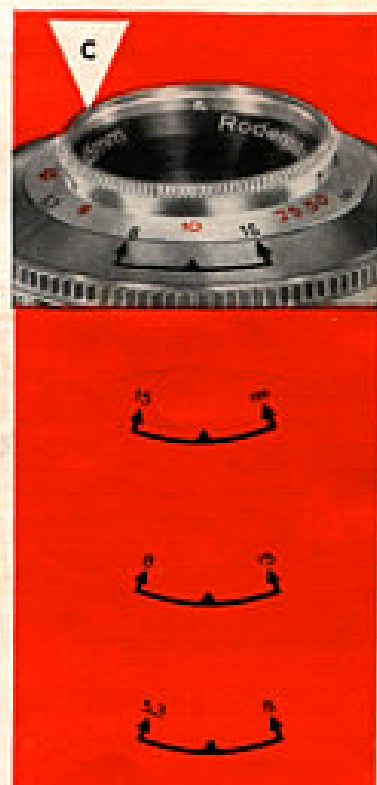
Zone Focusing

The focusing system of your RETINETTE I B is designed for taking photographs at a moment's notice.

You simply turn the knurled lens ring (c) until it indicates the distance zone in which the main subject lies.

At the first position, the two black arrows point at 15 and ∞ (infinity). Your camera is then set for views from 15 feet to the far distance. The middle position indicates mid-distance, between 8 and 15 feet. The third position is for close-ups between 5 feet and 8 feet.

The distance zone indicated by the black arrows is correct for $f/4$. With smaller lens openings (e.g. $f/8$) an even wider zone will be sharp. But at larger lens opening ($f/2,8$) it is better to set to the triangle with the black or red figures the exact camera-to-subject distance.



Cocking the Shutter

The rapid film-wind thumb-lever of your RETINETTE I B is one of the proven features that have made the RETINA famous. A single swift movement of your thumb cocks the shutter, advances the exposure counter and winds the film on for the next picture.

Always operate the lever (d) to the limit of its travel. It will automatically return after it has been released. If the rapid film-wind lever cannot be swung out completely, although a film is inserted, this means that the film has run out. You should then rewind it as described on page 15.





How to Hold your Camera

The way you best hold your RETINETTE is determined by the subject. The two illustrations are merely meant as a suggestion as to how the camera should be held for shots in the horizontal (above) or upright pictures (below). One thing you should keep in mind is that the steadier your camera is held the sharper your pictures will be. The only movement is made by the forefinger or the thumb when releasing the shutter. A few attempts will certainly show you how naturally your RETINETTE handles.

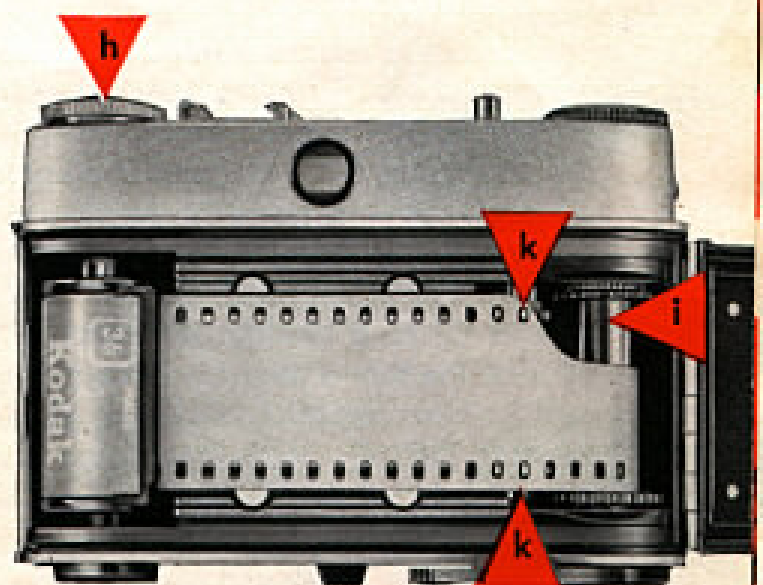


g Opening button

h Rewind knob

i Built-in take-up spool

k Film transport sprocket



Film Loading (in the shade)

1. Press the opening button (g) in the camera base and the camera back snaps open.
2. Pull out the rewind knob (h) as far as it will go.
3. Turn the built-in take-up spool (i) with your thumb until one of the slits faces up. Thread the trimmed film end into the slit and engage one of the perforations on the little hook in the slit.
4. Pull the film across the film track and insert the cassette in the cassette chamber. Turn the take-up spool until the teeth of the film transport sprocket (k) properly engage both rows of film perforations.
5. Push back the rewind knob (h) to its normal position and turn the knob clockwise, as indicated by the arrow, until a slight resistance is felt. The film is then properly tensioned.
6. Close the camera back, and make certain that you hear the latch engage.





Viewing and Releasing

The brilliant frame in the finder of your camera shows you the exact field area and makes viewing easier for you. When viewing, take care to keep your fingers clear of the honey-comb window of the exposure meter.

Turn the diaphragm ring by means of the black knob (e) until the pointer in the finder points to the Δ mark in the bottom of the brilliant frame (illustrations above and center page 11). Exposure is then correctly set.

Hold the camera steady and press the release button (f) fully down. The film advance thumb-lever should be operated after every shot.

The base line of the brilliant frame is interrupted once on either side. These marks have no bearing on your picture-taking. The small horizontal marks on the upright sides of the brilliant frame are parallax marks and are described in more detail on page 19.



If the pointer is on the extreme right-hand side and cannot be set to the Δ mark, turn the shutter ring to the left until the pointer can be centred on the Δ mark. (Care must be taken, however, not to set the shutter ring to B because the exposure indicator in the finder cannot be used with this setting.) Where the pointer is on the extreme left-hand side and cannot be set to the Δ mark the shutter ring should be turned to the right. If the pointer can even then, not be set to the Δ mark, or if the Δ mark is obscured (bottom illustration), light conditions are too poor for taking pictures.

Unloading the Film

After the last picture has been taken, the film has to be rewound. Depress the reserving button (n) in the camera base and turn the rewind knob (o) clockwise, as indicated by the arrow, until the reserving button stops turning (watch black dot on button). Open the camera back **in subdued light**. Pull out the rewind knob and remove the cassette from the cassette chamber.

If you should at any time have omitted to set the exposure counter it may happen that in a loaded camera the rapid film-wind lever cannot be switched to the limit of its travel. Depress the reserving button and operate the rapid film-rewind lever to complete its travel. The film can now be removed from the camera as above described.



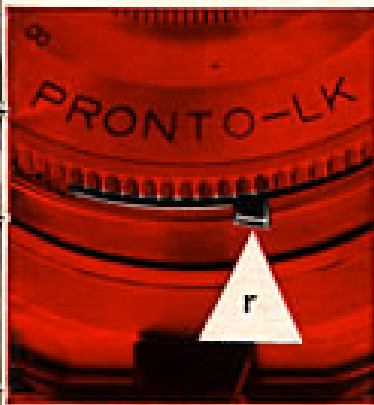
Setting the Exposure Counter and Film Indicator

The exposure counter (above) tells you how many shots you still have. Turn the black thumb ring (l) counter-clockwise until the diamond mark $\diamond$ is exactly opposite the triangular mark ∇ (m) (for 36-exposure cassette set $\diamond$ mark between 1 and 36; for 20-exposure cassette set $\diamond$ mark to 23). Cock the shutter and release, cock and release again, and cock a third time. The rewind knob should be seen turning as you do this. If it does not, tension the film a little bit more (page 12). The ∇ mark will be now opposite No. 36 or 20. To set the film indicator (below), hold the rewind knob and turn the inner serrated ring until the black dot points to the type of film used in the camera.

-  = Black-and-white Film
- Color  = Daylight Colour Film
- Color  = Artificial Light Colour Film



Self-timer for Greater Fun



Want to get into the picture yourself? Screw the camera to a tripod, cock the shutter and push the lever (r) marked in red to the side as far as it will go. If you now depress the release button, the shutter will not be released until after about 10 seconds. You have enough time, therefore, to get into the picture.

Once the self-timer has been cocked, the following picture must be taken with the self-timer. The self-timer can, of course, also be used for all flash shots.

Flash Shots Made Easy

Flash shots are no problem for the RETINETTE I B. Slide your flash unit, the KODABLITZ flashgun for instance, into the accessory shoe of your camera, plug the flash cable into the flash socket (p), and turn the shutter ring to $\frac{1}{30}$ sec. **The exposure indicator in the finder of your RETINETTE I B cannot, however, be used for flash shots.** The lens aperture required is calculated on the guide number of the flash bulb or electronic flash unit used. Go by the following rule:

Guide number divided by distance = aperture

For example:
$$\frac{\text{Guide number } 72}{\text{Distance } 9 \text{ feet}} = \text{aperture } f/8$$

Turn the diaphragm ring until the figure 8 is opposite the black dot (left).

If an electronic flash unit is used, the entire shutter speed range from $\frac{1}{15}$ to $\frac{1}{500}$ sec. is available for flash shots.



Close-up Parallax

At subject distances closer than 6 feet a so-called parallax error appears. In other words, the field of view outlined by the brilliant frame in the camera finder no longer corresponds exactly to the view recorded on the film. To compensate for this parallax at a subject distance of $3\frac{1}{2}$ feet, an imaginary line between the two opposite marks on the frame (the upper broken line in the illustration) indicates the upper limit of the field of view. As distances increase, this limit-line is gradually shifted up until at 6 feet it coincides with the upper border of the finder frame.



Time Exposures



The letter B on the shutter ring indicates the setting at which you can expose a picture for any length of time. Turn the milled shutter ring until the letter B is opposite the black dot. Now, once the shutter has been cocked, the shutter will remain open as long as you keep the release button depressed. The release time is dependent on the lens opening set. Because extended exposure times are too long for hand-held shots, the camera should be placed on a tripod and a cable release should be screwed into the release button.

The exposure indicator in the finder cannot be used in conjunction with the B setting. Self-timed shots cannot be taken at the B setting either.

for example

You want to use a yellow-green filter (F III) for a shot on black-and-white film. You have set the film speed dial to 28° BS. A look at the opposite table will show you that for the yellow-green filter (F III) the film speed setting must be reduced by three divisions, i. e. to 25° BS (as in the illustration).

If you remove the filter again, you should not forget to re-set the film speed to normal.



Filters

Filters are used for special photographic effects. Most filters have what is called a filter factor by which the normal exposure has to be increased. This is best allowed for by reducing the film speed setting by the number of divisions indicated in the table below, **before** taking the picture.

Kodak Filters for Black-and-white and Colour Films

Reduce film speed
setting by . . .

Skylight filter (haze filter for Kodachrome Daylight Film)	
— Ultra-violet filter	0
Light yellow (F I) — Daylight filter 85, 85 C and 85 B (Daylight filter for Kodachrome Film, Type A, Type F and Ektachrome Film, Type B)	
— Light Balancing Filter (for Kodachrome Film, Type F)	2
Medium yellow (F II) — yellow-green (F III)	3
Blue filter (F VI) — Pola-screen	4
Orange filter (F IV)	5
Red filter (F V)	9

Intentional Double Exposures

The release lock of the RETINETTE I B prevents accidental double exposure. If for special effects, such as a stunt picture, a double exposure is required, depress the reversing button after the first exposure, until the shutter has been recoiled by means of the rapid film-wind lever.

The film will not be advanced but will remain in position for a second exposure on the same frame. The exposure counter, however, will have advanced and will indicate one exposure more than has actually been taken.

Care of the Camera

Protect your lens and the finder windows against injury and finger prints. For dusting and polishing the glass surfaces, only a brush with very soft hair and a clean soft lintless cloth should be used. Also give the film track and cassette chamber an occasional brush to clean out dust particles.

Close-ups Closer Than 3 1/2 Feet

For close-ups within the range 37" to 12" the optical close-up rangefinder (F = 45) is available with the NI, NII or NIII a close-up lenses. The close-up rangefinder gives you a parallax-free field of view.



The Lens Hood

The lens hood should be your first accessory. It screens off stray light and also protects the lens against rain or snow, and it is as well to use it for all your pictures.



USE KODAK FILM 620

● 'VERICHROME' FILM V620

The universal film specially made for the amateur photographer. Its speed and latitude enable you to take snapshots in most daylight conditions.

● 'PLUS-X' FILM PX620

A general-purpose panchromatic film of similar speed for daylight or artificial light use. A favourite of those who prefer the picture quality of a film which responds to all colours.

● 'PANATOMIC'-X FILM FX620

A slower panchromatic film giving extra-fine-grain negatives particularly suitable for enlarging. 'Panatomic'-X is for bright subjects or sunny days.

● 'SUPER-XX' FILM XX620

A panchromatic film of highest speed for indoor and artificial light pictures, for outdoor snapshots in dull weather, and for all photographs taken in poor light.

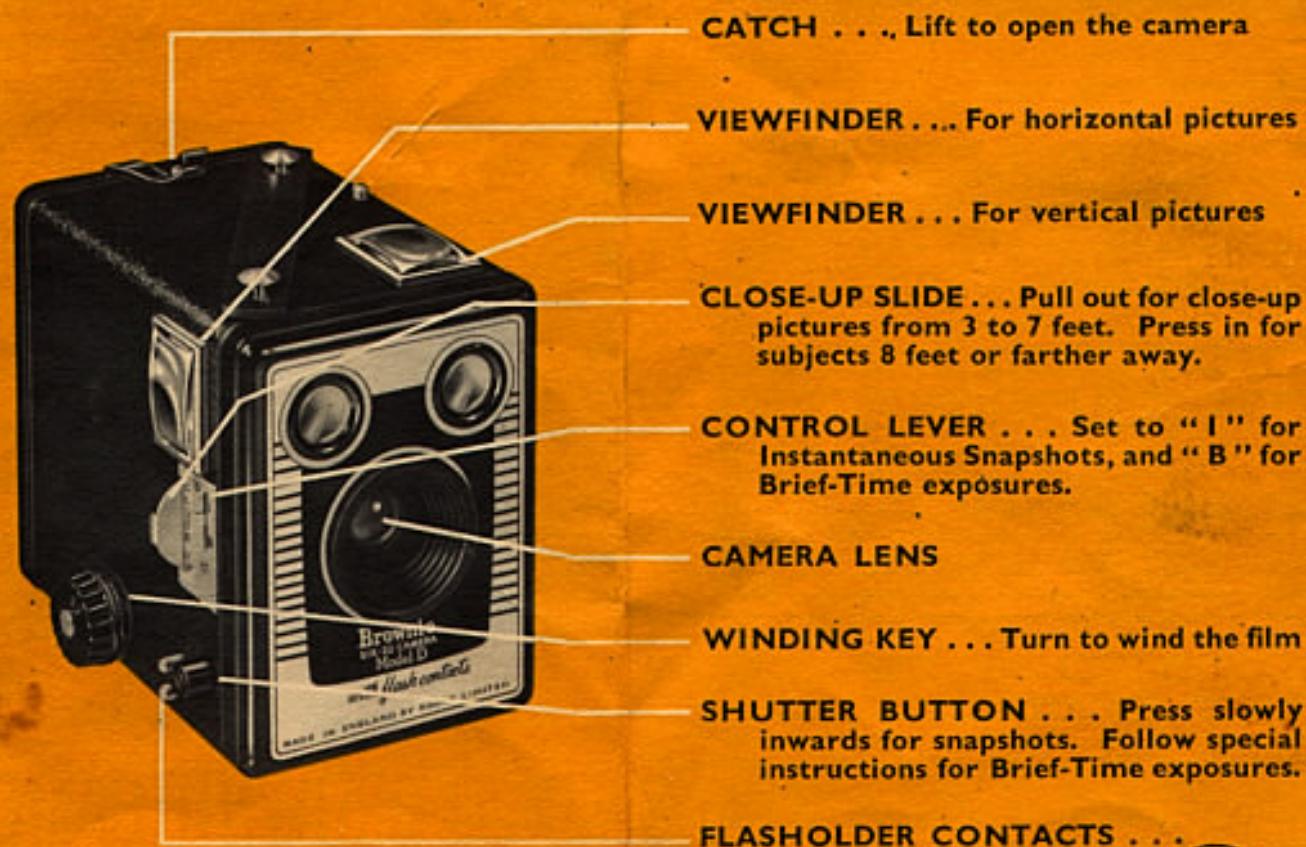
● A filter, for the better rendering of clouds and subject colours, can be fitted by means of a No. 370 'Kodak' Lens Attachment. See your Kodak dealer about this.



How to use your
SIX-20 'BROWNIE' CAMERA

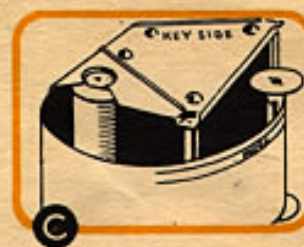
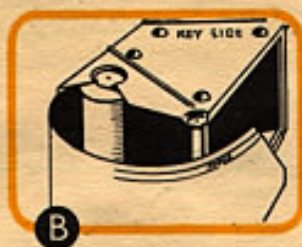
MODEL D

with flash contacts



Kodak, Brownie, Verichrome, Panatomic, Flu-X and Super-XX are trade marks





How to Load . . .

Load your camera in the shade—never in direct sunlight or strong artificial light. Use only size 620 film: Kodak 'Verichrome' Film V620 is recommended.

- A** Open the back of the camera by lifting the catch. Draw out the Winding Key as far as it will come. Withdraw the inside of the camera—called the Film Holder. Remove the empty spool.
- B** Place the new spool of film in the holder, in the position illustrated. Break the paper band and unwind about four inches of paper, keeping the rest of the film tightly wound.
- C** Take the empty spool, insert the end of the paper into the long slot and wind three turns on to the spool, with the black side of the paper towards the inside. Be sure that the paper winds evenly between the spool flanges.
- D** After drawing the paper over the back of the Film Holder, fix the spool into the holder at the end marked "KEY SIDE". Replace the Film Holder with the words "KEY SIDE" toward the Winding Key of the camera. Close the camera back.

Press in the Winding Key, and at the same time, turn it to engage the slot in the spool end. Continue to wind, and watch the red window in the camera back. Turn the winding key until a hand appears in the red window; then continue to wind slowly until the figure "1" is centred. After taking each picture, wind the film to the next number.

. . . and Unload

After the last picture (No. 8), wind until the end of the paper passes the red window.

Draw out the Winding Key . . .

. . . open the catch securing the camera back . . .

. . . and withdraw the Film Holder.

Remove the exposed film, holding it securely to prevent it unrolling. Fold under the end of the paper and seal it with the gummed paper band.

. . . for simple picture-making rules see other side

Follow these simple picture-making rules . . .

SNAPSHOTS

- 1 Set Control Lever to "I" (instantaneous) for all snapshots.
- 2 Look in the red window to make certain that you have advanced the film.
- 3 Check the distance. For subjects at between 3 and 7 feet, pull out the Close-up Slide. For subjects at 8 feet and beyond, be sure to have the Close-up Slide pushed in.
- 4 Check the light. The subject can be in bright or hazy sunlight, between an hour after sunrise and an hour before sunset.
- 5 Compose the picture. Decide whether it should be horizontal or vertical. The Viewfinder tells you what your picture will include.
- 6 Hold the camera steady. Camera shake will blur the picture. Press the Shutter Button inwards with a gentle squeezing action.



BRIEF-TIME EXPOSURES

When there is not enough light for a snapshot, a Brief-Time Exposure is made. Place the camera on a firm support. Be sure the camera front is within 2 or 3 inches from the edge so that the support does not show in the picture. Never hold the camera in the hands for "B" exposures.

Set the control lever to "B".

Steady the camera and press in the shutter button slowly. The shutter will remain open for as long as the shutter button is held in. It will close when the button is released.

After making "B" exposures, move the control lever back to "I".

The exposure time needed will depend on the lighting conditions and subject, and cannot be specified exactly, but the following will give some guidance:—

Near sunrise or sunset or in deep shade 1-5 sec.

Indoors near to windows 5-10 sec.

Interiors lit by daylight 5-30 sec.



*How to
use your*

**SIX-20
FOLDING
'BROWNIE'**

CAMERA

**with
f/6.3 LENS AND
'DAKON' SHUTTER**

KODAK LIMITED LONDON

FIRST—GET TO KNOW YOUR CAMERA

CATCH FOR
CAMERA BACK

VIEWFINDER

WINDING
KEY

FLASHHOLDER
CONNECTOR

SHUTTER
RELEASE

DISTANCE
PIN

SHUTTER SPEED
POINTER

LENS APERTURE
POINTER

LATCH
BUTTON

CATCH
LEVER

5/30/3TF281251

TO ERECT

Raise the catch lever and draw camera front fully open.

TO FOLD

Press latch button below lens and fold up camera front. When closed, lower catch lever to lock.

NOTE: Return lens-focusing ring to ∞ before folding.

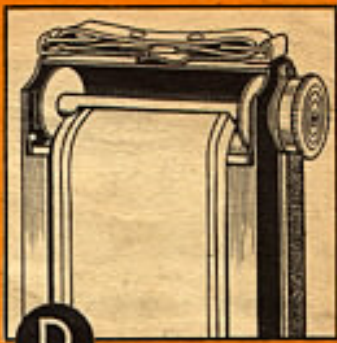
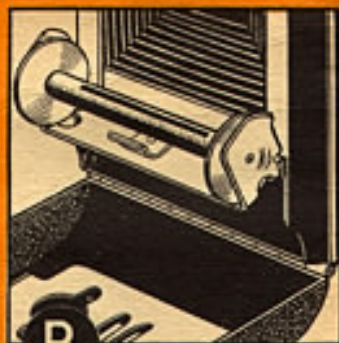


• The viewfinder is a direct-vision type for use at eye-level. It folds flat at the side of the camera when not in use. Hold the camera steady against the forehead or against the bridge of the nose, with the viewfinder close to the eye, as shown above. Press gently on the shutter release to take the picture. Take great care that you do not shake the camera when releasing the shutter—this is a common cause of blurred pictures.



★ With a 'Kodak' Flashholder fitted to this camera you can take snapshots by flashbulb at night. Your Kodak dealer has details.

FIRST—GET TO KNOW YOUR CAMERA



TO LOAD

- A** Lift the catch and open the camera back. Pull out the winding key.
- B** Swing out the spool holder from the bottom spool recess. Unclip the empty spool and drop it into the top spool recess. Push in the winding key, at the same time turning it to engage the slot in the spool end.
- C** Take the new spool of film. Break the white paper band around it and clip the spool into the spool holder as shown, with the black side of the backing paper facing inwards. Swing the spool holder back into the spool recess.
- D** Draw off just sufficient backing paper to reach the top spool recess, and insert the tapered end into the longer of the two slots in the empty spool. Give the winding key two or three turns only, to ensure that the paper is securely held and winds evenly between the spool flanges. Close the camera back. Now look into red window (swing aside cover plate)

and turn the winding key. First you will see a hand, then dots, then a figure 1. Stop when figure 1 is central in window. Swing back cover plate.

The film is now correctly set for the first picture. After taking picture number 1, wind the film to figure 2, and so on for a total of eight pictures.

TO UNLOAD

When picture number 8 has been taken, wind the film until the end of the spool paper passes the red window. Open the camera back.

Hold the exposed film spool between finger and thumb and with the other hand pull out the winding key. Ease the film spool out of the top spool recess, taking care to prevent unwinding. Fold the end of the backing paper under, where marked, and secure the end of the backing paper with the white gummed strip provided.

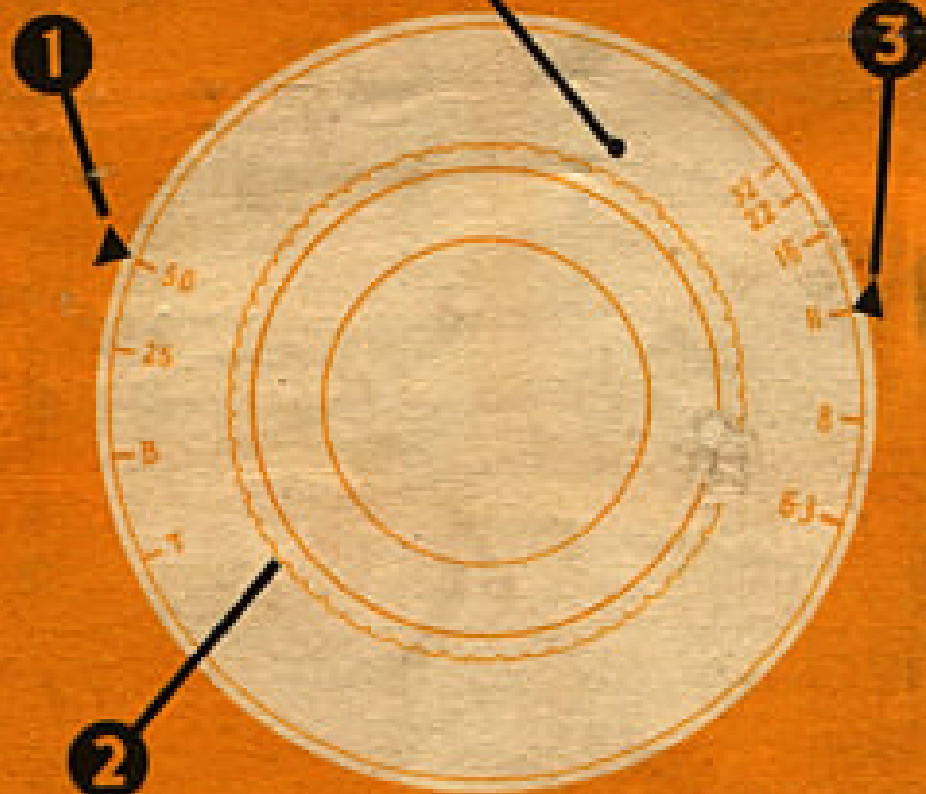
Keep the film away from bright light by wrapping in paper or placing it in a pocket or handbag until you can hand it to a Kodak dealer for developing and printing.

THE CORRECT SIZE OF FILM FOR THIS CAMERA IS No. 620. ASK FOR KODAK 'VERICHROME'.
YOU MAY LOAD AND UNLOAD YOUR CAMERA IN THE SHADE, BUT NEVER IN DIRECT SUN

**SHUTTER-SPEED
POINTER**

**DISTANCE
PIN**

**LENS-APERTURE
POINTER**



**LENS-FOCUSING
RING**

TYPE OF SUBJECT		BRIGHT SUN	HAZY SUN	CLOUDY BRIGHT	CLOUDY DULL
BRILLIANT	Distant landscapes, beach, marine and snow scenes.	1/50 f/22	1/50 f/16	1/50 f/11	1/50 f/8
BRIGHT	Nearby subjects in marine, garden and snow scenes.	1/50 f/16	1/50 f/11	1/50 f/8	1/25 f/8
AVERAGE	Subjects in average surroundings, gardens, houses—not in shade.	1/50 f/11	1/50 f/8	1/50 f/6.3	1/25 f/6.3
SHADE	Subjects in open shade—lighted by open sky (not under trees).	1/50 f/8	1/50 f/6.3	1/25 f/6.3	Not Suitable

METRIC MODELS

Estimate distances in metres. Over 15 metres use ∞ setting



TIME AND BRIEF-TIME EXPOSURES

To take pictures indoors or out-of-doors when the light is not bright enough for snapshots, you need to give either a time or a brief-time exposure. These are obtained at settings of the shutter-speed pointer marked T and B.

When the exposure time required is less than 5 seconds use the setting for Brief-time (B). To take the picture, press on the shutter release—count the exposure time—let go the shutter release.

For exposure times longer than 5 seconds, use the setting for Time (T). To take the picture, press and let go the shutter release—count the exposure time—again press and let go the shutter release.

In either case stand the camera on a very firm support and both camera and subject must be perfectly still during the exposure time. You cannot take brief-time or time exposures with the camera held in the hand.

The following is a guide to the exposure time required:—

OUT-OF-DOORS IN EARLY MORNING, OR IN LATE AFTERNOON, OR IN DEEP SHADE } $f/16$ 1 to 3 seconds

INDOORS—PORTRAITS NEAR WINDOWS, OR INTERIORS WHEN LIGHTED WITH DAYLIGHT } $f/16$ 3 to 10 seconds

Interiors dimly lit with daylight or with artificial lamps may require an exposure of up to a minute or longer.

CLOSE-UPS AND PORTRAITS

Close-ups and portraits add greatly to the interest of the picture album, and it is not difficult to secure first-class results.

Follow these simple rules:—

Take special care to set the lens-focusing ring accurately to the distance between lens and subject. Until you have sufficient experience for special effects, do not tilt your camera appreciably up or down when taking portraits. Nearby subjects *centred* in the viewfinder will appear somewhat *off centre* in the photograph, because viewfinder and taking lens see the subject from different viewpoints. In close-ups, therefore, leave plenty of space at the top of a horizontal picture and at the left of a vertical picture.

HALINA SIMPLETTE AUTO EE. Fully automatic exposure control. 45mm f/8 lens. Lever wind. Accepts flash cube. Supplied as a kit, with colour film, flashcube, and batteries, **£7.60.**

J. J. Silber Ltd

HANIMEX 126 OUTFIT. Includes 1 Fuji Neg. film (126 x 12 exp.) 1 flash cube, batteries, wrist strap. Lens — Hanimar. Price **£5.25.**

Hanimex (UK) Ltd

HANIMEX AUTO 126XL OUTFIT. Suitable for Magicube flash. Built in CdS exposure meter-warning indicator for



under exposure. Double exposure prevention. Large viewfinder. **£8.95** with film, flash bulbs and carrying strap.

Hanimex (UK) Ltd

HANIMEX AUTO 126XE OUTFIT. Added sophistication of two automatically selected shutter speeds, along with CdS automatic exposure meter. With carrying strap. **£10.75.**

Hanimex (UK) Ltd

INSTAMATIC 28. For daylight photography taking 126 film cartridges and featuring a fixed-focus 43mm f/11 lens, 2-speed shutter of 1/80 and



1/40sec marked with symbols for "full sun" and "hazy sun", double exposure prevention device, clear eye-level viewfinder, wrist strap, etc. The camera is not equipped for flash. **£3.15.** Case **89p.**

Kodak Ltd

INSTAMATIC 33. No focussing is required, sharp pictures being obtained for subjects between 4ft from the camera and infinity. This camera has a large viewfinder, convenient knob film wind, double-exposure prevention device, and flash contacts for the accessory instamatic flashcube holder. There are



two settings, one for "bright sun" and the other for "cloudy bright" or "flash". A wrist-strap is provided for easy carrying. **£3.80.** H33 case, **91p.** Also available as outfit with 126 Kodacolor-X film (12 exposures) and wrist-strap. **£4.30.**

Kodak Ltd

INSTAMATIC 55X COLOUR OUTFIT. Lowest priced camera in the new 55 range. Takes Magicubes direct, (no flashcube holder is necessary). The Magicube is turned manually to bring the flashbulb into position. Features include 43mm f/11 lens giving pictures



from 4ft to infinity; single-speed shutter of 1/60sec, eye-level viewfinder, spent bulb indicator, double exposure prevention device, wrist strap. Outfit complete with camera, 12-exposure Kodacolor-X film, Magicube, wrist strap **£6.26.** Camera with wrist strap **£6.08.** Carrying case **80p.**

Kodak Ltd

INSTAMATIC 155X COLOUR OUTFIT. Flash without batteries using Magicubes, viewfinder with a bright-line frame, 2-speed shutter 1/80 and 1/40sec with "bright sun" and "cloudy sun/flash" symbols, 43mm f/11 lens



giving pictures 4ft to infinity, spent bulb indicator in viewfinder, double exposure prevention device and wrist strap. Outfit complete with camera, 12-exposure Kodacolor-X film, Magicube, wrist strap **£8.48.** Carrying case **80p.**

Kodak Ltd

INSTAMATIC 255X COLOUR OUTFIT. No battery flash with Magicubes (a signal in the bright-line viewfinder warns against spent bulbs in the firing position, dial-the-weather control enabling accurately exposed pictures to be taken from "bright sun" to "cloudy dull" conditions, f/6.6 Reomar fixed



focus lens giving pictures 4ft to infinity, double exposure prevention device. Outfit complete with camera, 12-exposure Kodacolor-X film, Magicube, wrist strap **£12.59.** Carrying case **80p.**

Kodak Ltd

INSTAMATIC 355X COLOUR OUTFIT. Top model in the range made by Kodak AG in Germany. It features an electronic shutter which provides accurate exposure over a very wide range of lighting conditions. The shutter automatically gives exposures from 1/300sec to around 10sec — a yellow light in the viewfinder glows when the exposure will exceed 1/30sec, warning the user that the camera requires a rigid support. Other features include no battery flash with Magicubes and a



bright-line viewfinder. Outfit complete with camera, 12-exposure Kodacolor-X film, Magicube, wrist strap **£22.77.** Carrying case **80p.**

Kodak Ltd

MINOLTA AUTOPAK 600X Features automatic flash which comes into action by itself when the CdS electric eye indicates that the light is too dull for normal automatic photography. Takes flashcubes which auto rotate onto a



fresh side. With cube on camera flash will only operate in dull light when the exposure is controlled by the focus which controls the aperture. Special flash feature brings cube into action in daylight for synchro sunlight, 38mm f/2.8 Rokkor lens, bright frame viewfinder. Price **£31.95.** Case **£2.11.**

Japanese Cameras Ltd

MINOLTA AUTOPAK 400-X Operates without batteries. Electric eye exposure control with automatic change-over to flash in dull lighting.



Takes Magicubes. All-glass Rokkor lens, special shutter lock, leverwind, bright frame viewfinder with flash signal. **£21.95.** Case **£1.95.**

Japanese Camera Ltd

PRINZ ASTRAL S5. Fixed focus. Supplied in outfit form, comprising camera, case, wrist strap, and 126 Prinzcolor Neg. film. Incorporates Magicube facility. Outfit price **£4.25.**

Dixons Photographic Ltd

PRINZ ASTRAL S20. Specification as above, but includes electronic sensor to indicate when flash is required. Outfit price **£5.95.**

Dixons Photographic Ltd

PRINZ ASTRAL S30. Automatic exposure control. Built-in flash sensor, Magicube flash. **£8.95.**

Dixons Photographic Ltd

REGULA DIPLOMATIC-C. Two-speed shutter. Flashcube socket covered by slide-along cover when not in use.



Capacitor flash circuit. **£6.95,** case **£1.07.** Kit with film, flashcube, wrist strap, battery. **£9.78.**

Photopia Ltd

REGULA INSTAKING 124. Isco lens; direct-vision viewfinder; large viewfinder eyepiece; single speed shutter; tripod bush; carrying strap lug. Built-in cube flash rotates after firing. Capacitor



flash circuit. Flick-wheel film wind. Black and chrome trim. **£4.95,** purse case **£1.24.** E.R. Case **£1.78.**

Photopia Ltd

REGULA INSTAKING ELECTRONIC. Electronic exposure control from CdS cell set in the lens. Camera sets exposures from 15sec to 1/300sec. Warning signal in viewfinder indicates that a tripod should be used with exposures longer than 1/30. Isco lens; auto rotating flashcube socket; capacitor flash circuit; double and missed exposure prevention; direct-vision viewfinder; large viewfinder eyepiece; tripod socket; lug for wrist strap. **£22.95.** Purse-type case **£1.24.** E.R. Case **£1.78.**

Photopia Ltd

REGULA INSTAKING AUTOMATIC. Automatic exposure control from CdS electric eye. Viewfinder warning signals, built-in unit for flashcubes, large eyepiece viewfinder, Isco lens. Spring-open back. Price **£15.95.** Pouch-type case **£1.24.** E.R. Case **£1.78.**

Photopia Ltd

INSTA-PLUS 1100. Sunny/cloudy exposure settings. Takes flashcubes. Large viewfinder, wrist strap lug. Auto wind with double exposure prevention. **£3.20.**

Photopia Ltd

ROLLEIFLEX SL26. Single lens reflex camera for 28 x 28mm format. Has quick return mirror. Ttl exposure



SUB-MINIATURE CAMERAS

MINOLTA 16MG. Takes 16mm unperforated film. Rokkor TD 20mm f/2.8 lens, four elements. Built-in close-up lens. Programmed shutter 1/30th to 1/250sec, synchronized.



Follow-pointer meter coupled to programmed shutter, range EV. 8 to 16. Film speeds ASA 25-400. Over- and under-exposure warning signal. Supplied with case, wrist strap, uv filter, yellow filter, and flashgun. £44.95, camera only £38.95.

Japanese Cameras Ltd

MINOLTA 16PS. 10 x 14mm; 20 exp. on 16mm film; f/3.5 25mm fixed focus Rokkor lens, single speed (1/50sec) shutter, simple-to-use exposure calcu-



lator cpld. to diaphragm. Shutter setting and film transport by semi-concealed wheel, self resetting picture counter. £13.95. Also available as outfit with case, flashgun and accessory shoe, £19.97.

Japanese Cameras Ltd

MINOLTA 16-11. 10 x 14mm; 20 exp. on 16mm film in daylight cassettes. Camera 3 x 1 1/2 x 1 in; 6oz. Fixed focus f/2.8 22mm Rokkor lens (supplementary lenses down to 22in distance available);



5-speed F/P-type shutter, 1/30 to 1/500sec and "B", synch. Film transport, shutter wind, etc. by opening and closing telescopic body. £19.55. Also available as outfit with case, flashgun, neck chain, uv and yellow filters, £26.95.

Japanese Cameras Ltd

MINOLTA 16 MG-S. Gives 12 x 17mm negatives. Has 23mm f/2.8, 4 element Rokkor focussing down to 10ft with built-in short distance lens down to 4ft. Lens cover automatically switches off meter and locks shutter. Shutter



speeds from 1/30 to 1/500. X synchronization. Built-in CdS electric-eye gives semi-auto control. Automatic shutter release lock at over/under exposure and warning in viewfinder. Bright-frame viewfinder with parallax correction marks. ASA 25-400. Minolta 16 MG-S with case, £65.95. Minolta 16 MG-S flash cube kit, £71.95. Minolta 16 MG-S AGI flash kit £70.95. Minolta 16 MG-S kit with flashgun, filters and close-up lenses, £89.95. Minolta 16 MG-S system kit, £146.95.

Japanese Cameras Ltd

MINOLTA 16 QT. Superminiature model with 12 x 17mm format. Viewfinder with bright frame and exposure signals. Shutter speeds 1/30 and 1/250sec. Flash synchro,



23mm f/3.5 Rokkor lens with symbol focussing, auto frame counter. CdS electric eye controls exposure. Minolta 16 QT £39.95. AGI flash kit £45.95. Flash cube kit £45.95.

Japanese Cameras Ltd

MINOX B. 8 x 11mm special film 50 exposures (36 exposures colour). Measures approx. 3 1/2 x 1 1/2 x 1/2 in. Weight 3 1/2 oz. Daylight loading cassettes; built-in filters, film advanced and shutter set by one simple sliding operation. Cpld. exp. meter. Optical B/L parallax corrected finder. 15mm f/3.5 lens focussing to 8in in synch. 9-speed shutter, 1/1000sec. B. and T. £103.91. Also with black satin finish £114.45, price includes case.

E. Leitz (Instruments) Ltd

MINOX C. Similar in design to the Minox B but with electronic shutter and CdS exposure meter with automatic exposure from 1/1000sec to approx 7secs, film speed settings from ASA 6-400, manual override of the electronic shutter with settings from 1/100 to 1/15sec. Improved film loading as gate opens automatically when camera is opened. Flash synchronization. Size 3 1/2 x 1 1/2 x 1/2 in. and weight 3 1/2 oz. £140.17. Also with black satin finish £150.83, price includes case.

E. Leitz (Instruments) Ltd.

ROLLEI 16S. Takes 18 exposure cassettes on 16mm film 12 x 17mm. Fully automatic exposure control, the programmed shutter giving pre-chosen combinations of apertures from f/2.8 to f/22 and exposure times from 1/30 to 1/500sec. Provision for flash. The Rollei flash 16 attaches to the camera taking



AGI size bulbs. Bright-line finder parallax corrected. f/2.8 25mm 4-element Zeiss Tessar lens focussing from infinity to 16in. Takes Mutar tele and wide-angle attachments. The viewfinder is marked for tele and standard lenses. Opening and closing the camera operates the film transport mechanism and sets the shutter — double exposures or blank frames are impossible. Double claw film transport and soft release button. Improved

locking catch and simplified flash and time exposure setting. Real leather covering. Crank rewind. Size 1 1/2 x 1 1/2 x 4 1/2 in. Weight 9oz. £132.33.

R. F. Hunter Ltd

YASHICA ATORON ELECTRO Electronic 16mm camera (accepting Minox type film) 18mm f/2.8 Yashinon lens. Shutter speeds from about 8sec to 1/350. Fully automatic, with slow shutter speed warning lamp. Including flash gun, right angle finder, leather pouch, and wrist chain in presentation case. £96.98 including case.

Photex (London) Ltd

HALF FRAME CAMERAS

OLYMPUS PEN EE2. With f/3.5 four element fixed focus lens. Automatic



programmed shutter, 1/40 and 1/200sec. ASA 10-200. Manual control for flash (X synch.) £27.99, case £2.90.

David Williams (Cine Equipment) Ltd

TESSINA 35L. Half frame twin lens reflex camera. Size 2 1/2 x 2 x 1 in uses standard 35mm film. Tessinon 25mm f/2.8 lens, focusses down to 9in. Automatic film transport for rapid sequence shots. Shutter speeds 1/1000sec plus B. X and M synchronization. Full range of accessories, pentaprism, filters, wrist strap etc. Price complete with day light loader and sports viewfinder, £69.75. Tessina 35L with cross coupled exposure meter, £78.77, choice of cases extra.

MS Imports

126 EASY-LOAD CAMERAS

AGFA ISO-PAK. 126 Pak loading for 12 or 20 exposures. Agfa Parator 1/40 and 1/80sec shutter. Quick film lever transport, cassette ejector. Flashcube device (shutter is automatically set to 1/40sec when inserting a flashcube). Manual Iso-Pak £4.63. Outfit £5.69.

Agfa-Gevaert Ltd

AGFAMATIC 100 SENSOR. 126



cartridge loading camera with Sensor release. Fixed focus f/11 Agfa Colorstar lens, large, clean brightline viewfinder, with signal to indicate spent cube, two-speed shutter with settings for sunny and cloudy/flash conditions, automatic transport for X-type flashcubes. The Agfomatic comes in a presentation outfit containing camera, 1 Agfacolor CNS 126 12 exposure film, wrist-chain, Magicube, £10.99.

Agfa-Gevaert Ltd

BOOTS INSTAPAC X. Magicube flash holder, thumb wheel transport, fixed focus meniscus lens, used flash indicator. Price in outfit form £4.75 (includes camera, one Colourprint film, one Magicube, wrist strap in gift pack). Leather pouch case available 80p.

The Boots Co Ltd

BOOTS COMET 200 Dial the weather symbols and flash distance symbols for aperture, flash cube holder, thumb wheel transport, f/9.2 fixed focus Acromat lens. Uses 2 MN1500 batteries for flash. Price in outfit form £6.25 (includes camera, Colourprint film, 2 MN1500 batteries, one flash cube, wrist strap in gift pack). Leather pouch case available 80p.

The Boots Co Ltd

CANOMATIC M70. Fully automatic with programmed exposure meter. Electric motor film wind, auto exposure control and auto flash which may be



used for day and night photography. Brightline finder with shutter speed visible, also, flash signal. Accepts flashcube, 40mm f/2.8 lens, 4 elements, shutter speed to 1/800sec approx. £51.07 including case.

J. J. Silber Ltd

CANOMARINE underwater housing for above camera, usable under all conditions where damage to the camera may occur due to spray, sand, grit, etc. £14.05.

J. J. Silber Ltd

HALINA COMPUTOR. Has fully automatic exposure settings. Fixed focus, coated, lens, and flash-cube socket. Finished in satin chrome and black. £5.50 or as pack with colour film, flash cube and battery, £8.28.

J. J. Silber Ltd

HALINA EASYMATIC. As Computor



but with manual settings for cloudy and bright. £5.21, or as pack £5.90.

J. J. Silber Ltd

ABBREVIATIONS USED: Acc. shoe, accessory shoe; bdy. re., body release; B/L, bright line; CdS, cadmium sulphide cell; cpld. R/F, coupled range finder; d.a., delayed action; dble. exp. prev., double exposure prevention; E/V, exposure value; exp. meter, exposure meter; F/P focal plane; film type ind., film type indicator; L-wind, lever-wind; M, synch. for flashbulbs; p.e. photo electric or selenium; F/F, range finder; synch., synchronised; TTL, through the lens metering; X, synch for electronic

measurement and microprism focussing. Pre-select exposure time and match the needle in the finder. Shutter speeds 1/500sec and B. Lens: Standard Zeiss Tessar f/28 40mm. Additional lenses available as accessories. Pro-Tessar f/3.2 28mm Wide Angle and Pro-Tessar f/4 80mm. **£127.96.**

R. F. Hunter Ltd

NON-REFLEX TYPE CAMERAS

BOOTS AMICA 2. Fully automatic with CdS meter and manual over-ride. 44mm f/2.8 lens, 4 speed shutter (1/30sec to 1/300 and B). Double-image rangefinder, bright line viewfinder with parallax adjustment frame. Shoe flash contact. Meter readings within the viewfinder window. Meter activated only when shutter cocked. Automatic film counter. Lever wind. Meter built within the lens mount. Price **£23.10.** Black ever-ready leather case **£3.75.**

The Boots Co Ltd

BOOTS AMICA 3. Fully automatic with built-in CdS meter and manual override. Has 45mm f/1.8 six-element Tosicor lens. 10-speed Citizen shutter (1sec to 1/500sec), plus B and self-timer. Fully synchronized. Coupled CdS meter activated only when shutter cocked. Bright line viewfinder with parallax correction, aperture indication within viewfinder. Double image rangefinder. Lever wind. Automatic film counter. **£34.75.** Black leather ever-ready case **£3.75.**

The Boots Co Ltd

PACEMAKER 35P. Has programmed Rectomat shutter with combination of apertures and speeds from 1/30 at f/2.8 to 1/300 at f/16, plus B. Weather symbol guide. Synchronized for bulbs or electronic. Bright-line finder with parallax marks, lever wind, crank rewind, accessory shoe, tripod bush. 45mm f/2.8 Color Isconar three element lens. **£8.96, case £2.79.**

The Boots Co Ltd

PACEMAKER LP. As Pacemaker 35P but with selenium cell meter. **£13.16, case £2.79.**

The Boots Co Ltd

PACEMAKER CM. As Pacemaker 35P but with selenium cell meter and built-in flash socket. **£16.96, case £2.79.**

The Boots Co Ltd

BEIRETTE PRIOMAT. 45mm f/2.9 Meritar three element lens, three shutter speeds 1/30, 1/60 and 1/125 and B setting linked to film speed setting, dial the weather control to set aperture. Flash shoe and co-axial contacts, lever wind transport, film counter with eye-level bright line viewfinder, accessory shoe. **£7.25, case £1.69.**

The Boots Co Ltd

BOOTS PACER 35K. Compact with 40mm f/2.8 Rexar lens. Has programmed shutter with combination of apertures and speeds from 1/30 f/2.8 to 1/300 f/16 plus B. Synchronized for bulbs or electronic, brightline viewfinder with parallax marks, lever wind, crank rewind, accessory shoe, tripod bush and depth of field scale. **£10.95, case £3.15.**

The Boots Co. Ltd

BOOTS PACER 35LK. As Pacer 35K but with selenium cell meter. **£16.75, case £3.15.**

The Boots Co Ltd

CANON CANODATE E. Fully automatic camera with rangefinder and CdS meter. Electronic programmed shutter with speed from 1/30sec to 1/800sec and 40mm f/2.8 lens. Hot shoe contact for automatic flash



exposures. Special feature is the date setting on the front of the camera to enable the user to superimpose the day, month, year into the bottom right hand corner of the negative area. Price **£76.14** including case.

J. J. Silber Ltd

CANON DEMI EE 1.7. With Canon 28mm f/1.7 lens Coupled CdS metering system via programmed shutter. **£49.76.**

J. J. Silber Ltd

CANONET 28 COMPACT. CdS powered programmed EE shutter with speeds from 1/30 to 1/600 sec. Manual control 1/30sec. X flash sync, accessory shoe operates automatically with Canonite D flashgun. Viewfinder has double-image scale and over/under exposure warning marks. 3 element 40mm f/2.8 lens. Price **£42.82.** Case **£4.97.**

J. J. Silber Ltd

CANONET COMPACT QL1.9. Automatic or manual CdS meter, automatic flash exposures with electronic flash, coupled rangefinder hot



shoe, bright line framefinder, shutter speeds 1/30 to 1/500sec, QL system film transport indicator, delayed action, 45mm lenses, f/1.9 or f/1.7. QL1.9 **£57.90, QL 1.7, £68.18.**

J. J. Silber Ltd

COSMIC 35. Has 40mm three-element f/4 lens. Shutter 1/250 to 1/15 and B. Synchronized X. Depth of field scale,



film reminder dial L.V. scale, tripod bush, body contoured for easy holding, wheel film advance. With ever-ready case. **£6.72.**

Technical & Optical Equipment Ltd

COSINA 35E COMPACT. Auto/manual CdS meter. Programmed EE shutter with speed from 1/30 to 1/650sec. Flash setting and hot shoe. Viewfinder



has a bright line double-image rangefinder, speed and f/stop over/under exposure warning marks. Lens 38mm f/2.7. Black, including case **£45.95.**

J. J. Silber Ltd

FED 3L. With f/2.8 Industar four-element lens, coupled range/viewfinder focussing from 1m to infinity, dioptric eyepiece, focal plane shutter



speeds 1sec to 500, B, delayed action, X synchronization, rapid lever wind, interchangeable lens, Leica thread, accepts Leica-Canon type lenses and accessories. **£19.46.**

Technical & Optical Equipment Ltd

FED 4L. With f/2.8 Industar four-element lens, coupled range/viewfinder focussing from 1m to infinity, dioptric eyepiece, focal plane shutter



speeds 1sec to 500, B, delayed action, X synchronization, built-in meter, lever wind, interchangeable lens, Leica thread, accepts Leica-Canon type lenses and accessories. **£21.95.**

Technical & Optical Equipment Ltd

FUJICA COMPACT. 38mm f/2.8 Fujinon lens. Bright-line finder with parallax marks, focussing symbols, aperture and shutter speed scales.



Selenium cell meter giving automatic exposure setting or indication for manual, ASA 12 to 200. Shutter speeds 1/30 to 1/250 and B. X synchronization at 1/30. Focussing to 2ft 6in. Self-resetting counter. With soft case. **£39.75.**

Hanimex (UK) Ltd

HALINA PAULETTE. 45mm f/2.8 Halinar lens. B/L finder; single stroke lever wind; resetting counter; shutter



speeds to 1/250sec and B. Fully synchronized. Focus to 3ft. **£11.39.**

J. J. Silber Ltd

HALINA PAULETTE ELECTRIC. As standard Paulette, but with built-in



non-coupled meter. **£14.27.**

J. J. Silber Ltd

HALINA 500. Automatic exposure control from CdS cell ASA 25 to 400. Manual flash settings, f/2.8 to f/22. Shoe contact and coaxial socket. Thumbwheel film transport, bright-line



finder, cable release socket, hinged back, wriststrap, click-stop focussing with symbols, self-resetting counter, tripod bush, satin chrome and leatherette finish. Size 4 1/4 x 2 1/4 x 2 1/4 in. **£19.00.**

J. J. Silber Ltd

HANIMEX COMPACT 500A. Fully automatic CdS exposure meter. Details to be announced later. Approx price **£23.**

Hanimex (UK) Ltd

LEICA M4. Rapid loading system which accepts Leitz or standard cassettes. Angled rapid rewind folding crank. Automatic parallax compensation and field frames for lenses of 35, 50, 90 and 135mm focal lengths. Viewfinder image is 1/2 life size. Combined viewfinder and rangefinder. Self-resetting counter. F/P shutter with single dial for 1 to 1/1000sec and B, also D. A. Provision for coupling to Leica-meter MR/M4 exposure meter. Coaxial sockets for electronic and bulbs. Lever wind film transport. Field selector lever allows choice of required focal length prior to the actual fittings of the lens selected. With 50mm f/2.8 Elmar **£229.39**, with 50mm f/2 Summicron **£281.51** with 50mm f/1.4 Summilux **£327.10**. Attachable Leicameter MR, **£29.57** extra.

E. Leitz (Instruments) Ltd

LEICA M5. Removable rapid loading spool. Rewind crank in base-plate. Combined viewfinder and rangefinder.



Automatic parallax compensation and bright-line frames for 35mm, 50mm, 90mm and 135mm focal lengths. Field selector lever. Self-resetting counter. F/P shutter with speeds from 1 to 1/1000sec and B visible in viewfinder. Through-the-lens light metering with selective light measurement. Follow pointer system coupled with film speed, shutter speed and aperture. Meter battery (PX 625) automatically switches off after each exposure and is switched on by advancing film winding lever. Measuring range 21 EV steps. Film speed settings from ASA 6-3200. Rapid changing bayonet fitting lenses. Co-axial sockets for electronic flash and bulbs also hot shoe X synchronization. With Summicron 50mm f/2 lens **£402.48**, with Summilux 50mm f/1.4 lens **£448.08**. Ever ready case **£14.66**.

E. Leitz (Instruments) Ltd

MINOLTA HI-MATIC C. Lens barrel retracts into body of camera for compactness. CdS meter. Shutter sets for "sunny" or "dull". Automatic exposure control. Auto flash sets



aperture as lens is focussed. f/2.7 40mm Rokkor lens; multi-slot take-up spool; both hot-shoe and cable synchro, single stroke lever-wind; auto re-set frame counter. Viewfinder shows symbols for close-up groups and views. Camera is 4in. long and weighs under 15oz. **£38.95**. Porch type case **£3.18**.

Japanese Cameras Ltd

MINOLTA AL-F. Has automatic exposure control through CdS metering and a programmed shutter. EV range 7.9 to 18 ASA 25-500. Also manual



control. Rokkor f/2.7 four-element lens. Bright-line finder. Coupled rangefinder with aperture linkage for flash. Multislot take-up spool for easy loading. **£44.95**. Case **£4.13**.

Japanese Cameras Ltd

MINOLTA HI-MATIC 7S. With 45mm f/2.8 Rokkor lens with coupled coincident image type rangefinder having automatic parallax compensation and combined with bright-line suspended frame viewfinder. Caters for films ASA, 25-800 two-section CdS cell is placed directly above, and has same angle of acceptance as the lens. Fully automatic exposure control, or exposure control by EV system, or conventional manual control of shutter and



diaphragm. EV number visible in viewfinder. Delayed action, lever wind and double exposure prevention. **£59.95**. Case **£5.61**.

Japanese Cameras Ltd

MINOLTA HI-MATIC 11. With Seiko ALA "super three" shutter, automatic control, diaphragm control with selection of shutter speed for 1/8 to 1/500 and automatic flash indoors. On flash, aperture is set as lens is focussed. Viewfinder shows rangefinder focus



spot, aperture scale, exposure warning, battery check, indicates when on flash and shows shutter speed in use. Self timer; Minolta easy loading system; safe loading signal shows that the film is loaded and travelling through the camera properly; takes eyepiece corrector; both centre-shoe and cord flash synchro. 45mm f/1.7 Rokkor lens. CLC metering system. **£67.95** Case **£6.40**.

Japanese Cameras Ltd

MINOLTA HI-MATIC E. Auto exposure camera with electronic programmed shutter. Speeds from 2 second to 1/1000. With flash fitted, and guide numbers set on camera the flash will automatically fire in dull light. When flash is in operation the exposure is



controlled by the focus lever which adjusts the aperture to suit the subject distance. Self timer, auto parallax viewfinder, 40mm f/1.7. Rokkor lens, coupled rangefinder, in-the-lens CdS cell Minolta Hi-Matic. **£72.85**. Case **£5.74**. Hi-matic E kit with Minolta Electro-Flash II **£89.95**.

Japanese Cameras Ltd

MINOLTA HI-MATIC 5. Compact full frame. Dual Sunny/Cloudy meter range. CdS exposure control. Focus controls aperture for flash. 40mm f/2.7 Rokkor lens, bright frame viewfinder with f/Stop scale. Hot-shoe and cord synchro, lever wind. Rangefinder focussing. All-black styling **£39.95**. Case **£2.08**.

Japanese Cameras Ltd

MINOLTA HI-MATIC F. Electronic shutter with 4sec to 1/1000 range. CdS

metering. Auto exposure control. Automatic flash with Flashmatic which sets aperture as lens is focussed. 40mm f/1.7 Rokkor lens, auto parallax



viewfinder, easy film loading, Safe load signal. Hot-shoe and cable synchro. Auto battery check lamp. Range finder focussing. Camera switches to flash as gun is fitted to shoe. **£54.95**. ER Case **£5.74**.

Japanese Cameras Ltd

OLYMPUS 35 ECR. Has Zeiko electronic shutter. 4sec to 1/800sec and safety lock. Flash at 1/20sec, via shoe contact or coaxial socket. Built-in coupled rangefinder. Bright line finder



with parallax mark, zone focus indicator, lamp indicator for battery check and slow shutter speed warning, another lamp indicator for fixed 1/20sec flash speed **£57.50**. Case **£2.90**.

David Williams (Cine Equipment) Ltd

OLYMPUS 35 SP. Automatic EE system from 1/15 to 1/250sec. Manual override extends range from 1 to 1/500sec plus B. G. Zuiko 42mm f/1.7 seven element lens. X synchronization, 10sec delay timer. Bright line finder with parallax correction and EV indicator. Coupled rangefinder. Flash contact in accessory shoe. Aperture couples to distance for flash work **£60.50**. Case **£5.07**.

David Williams (Cine Equipment) Ltd

OLYMPUS TRIP 35. Compact full-frame camera with four-element D Zuiko f/2.8 lens focussing down to 3ft. with symbol focus settings engraved on focussing scale as well as conventional feet/metre calibrations; brightline view-



finder with symbol focus settings; selenium meter around the lens controls automatic exposure system with shutter speeds 1/40 and 1/200sec over aperture range f/2.8 to f/16. Shutter release locks also red signal appears in viewfinder if lighting conditions are too poor. Self-resetting counter. Flash synchronized via centre contact accessory shoe and 3mm coaxial socket. **£31.50**. Case **£2.90**.

David Williams (Cine Equipment) Ltd

OLYMPUS 35 RC. Fully automatic or manual control full-frame coupled rangefinder compact. 42mm f/2.8 Zuiko lens in Olympus shutter speeded 1/15 to 1/500sec plus B. Shutter release lock when light is insufficient for good



exposure. X flash synchronization. Shutter speed and f/stop, parallax correction marks and low light red zone plus rangefinder image visible in viewfinder. Film speed range ASA 25-800. Lever wind. Flashmatic system for use with flash. Price **£54.50** Case **£2.90**.

David Williams (Cine Equipment) Ltd

PETRI 7S. Coupled selenium exposure meter. Needle visible in the viewfinder and on top of camera body. Shutter speeds 1-1/500sec, B and self timer



with either 4 element 45mm f/2.8 lens or 6 element f/1.8. Coupled rangefinder. **£46** (f/2.8 model) **£51.75** (f/1.8 model) ER case extra **£5.82**. Auxiliary tele and W/A lens set **£25.30**.

Johnsons of Hendon Ltd

PETRI COLOR 35D. Full frame compact camera measuring only 4 x 2.6 x 1.7 in. Coupled CdS meter, needle visible in viewfinder, Speeds 1/15 to



1/300sec and B. 40mm f/2.8 retractable lens. Hotshoe contact. **£48.88** complete in soft leather case.

Johnsons of Hendon Ltd

PETRI COLOR 35E. Fully automatic compact. Speeds 1/30 to 1/200sec. with X synch. at 1/30. Red under/over exposure signal visible in viewfinder. 40mm f/2.8 lens. Battery tester. **£51.37** complete in soft leather case.

Johnsons of Hendon Ltd

PETRI COMPUTOR 35. Automatic



CdS meter, selects correct shutter/speed aperture combination. Speeds 4sec to 1/250. An orange light visible in the viewfinder and on top of the camera body warns of slow shutter speed. 4 element 40mm f/2.8 lens. Coupled rangefinder. X synch. (1/20thsec.) **£63.25**, ER case **£7.37**.

Johnsons of Hendon Ltd

PRINZ MASTERMATIC III. With 45mm f/2.8 lens. Exposure meter. Four-speed shutter, synchronized. Brightline finder. Rapid lever wind. Double exposure prevention **£12.25**, case **£2.20**.

Dixons Photographic Ltd

PRINZ 35E. Fully programmed electronic shutter. 38mm f/2.7 lens focussing down to 3ft. Shutter speeds 1/30 to 1/650. Flash synchro coupling



by coaxial lead or hot-shoe contact. Delayed action. Self zeroing counter. Bright-line viewfinder. Built-in rangefinder. Available in chrome or black finish. **£26.95**. Pouch type case **£2.00**.

Dixons Photographic Ltd

REGULA PICCA C. Compact 35mm camera with single-ring Rectormat Shutter control from 1/30 at f/2.8 to 1/300 at f/16. XM synchro with hot-shoe. Bright frame view-finder, auto



exposure counter and focussing. 40mm f/2.8. Isco Color-Isconar lens. Lever wind, rapid rewind crank. Special light shutter release. Easy film load system. **£11.95**. Case **£3.97**.

Photopia Ltd

REGULA PICCA CB. Same features as Picca C but with built-in exposure meter.



Covers ASA 25-400. Meter shows speed/aperture combinations which are transferred to Rectormat shutter. **£17.95**. Case **£3.97**

Photopia Ltd

REGULA SPRINTY. As SPRINTY C300 but has built-in uncoupled exposure meter and brightline viewfinder. **£16.95**, case **£3.97**. Also available as outfit with



flashgun, 20-exp. film, battery, flashbulbs and case. **£24.95**.

Photopia Ltd

REGULA SPRINTY CC300. Rectamat single-ring control shutter which sets aperture and shutter speed. The programmed shutter provides exposure combinations of 1/30 at f/2.8 to 1/250 at f/16. The f/2.8 Isconar lens is scaled



in feet and metres and includes focussing symbols. Built-in exposure meter. Regular quick film load system. Brightline viewfinder, self-zeroing frame counter, crank rewind, cube flashgun and tripod bush. **£22.95**, case **£3.97**. Also as kit with case, film, flash cube, and battery **£28.95**.

Photopia Ltd

REGULA SPRINTY LK300. Automatic metering. Viewfinder exposure control indicator shows too much too little light warning signal. 45mm, f/2.8, Isco lens, special light shutter release,



bright frame viewfinder, Rectamat shutter with single ring control with exposure combinations from 1/30th at f/2.8 to 1/300th at f/16. Self-zeroing frame counter, easy film loading, leverwind. Regula SPRINTY LK300 **£27.95**, case **£3.97**.

Photopia Ltd

REGULA ELECTRONIC 35. With Prontor 250 electronic shutter giving



automatic exposure control. Cassar 45mm f/2.8 focusses to 3.3ft. Direct-vision viewfinder with close-up mark; centre-shoe flash synchronization; leverwind; Regula film loading system; auto reset frame counter; tripod bush, cable release socket; centre-shoe flash contact; crank rewind. Guide indicates speed in use. **£37.95**. Case **£3.97**.

Photopia Ltd

REGULA OLYMATIC 1A. Exposure-control is fully automatic; semi automatic, or manual. Exposure warning sign in finder. Rectormatic programmed



shutter with combinations from 1/30 at f/2.8 to 1/350 at f/16. Centre shoe flash contact. Self-resetting frame counter. Rapid lever wind. Gotar f/2.8 lens. **£26.95**, case **£3.97**.

Photopia Ltd

REGULA SPRINTY C300. Rectamat shutter/diaphragm unit 1/30, f/2.8 to 1/250, f/16 by one-ring control. 45mm f/2.8, Isco Color, Gotar lens, bright line



viewfinder. Self-setting exposure counter. Centre shoe flash contact. Easy film loading. **£10.95**, case **£3.97**. Also available as outfit with flashgun, 20 exp. film, battery, flashbulbs and case. **£17.95**.

Photopia Ltd

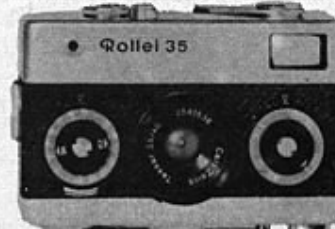
RICOR 500G. Compact with fully automatic CdS exposure meter. Rikenon 40mm f/2.8 lens. Accepts almost every



type of flash unit. Viewfinder shows framing, parallax compensation, f/stops, focussing, under-and-over exposure warning, manual or auto exposure settings. 4.3 x 2.8 x 2.2in, weight 13½ oz. **£45**.

Hanimex (UK) Ltd.

ROLLEI 35. Extremely small full-frame



35mm camera. Size 3½ x 2½ x 1½in. 40mm f/3.5 four-element Tessar lens, shutter speed 1 to 1/500sec and B. Coupled CdS meter. With purse. Chrome model **£99.27**. Black anodized model **£116.03**.

R. F. Hunter Ltd

ROLLEI B35. Basically as Rollei 35 but with shutter 1/30 to 1/500sec, 40mm Triotar f/3.5 lens, and built-in Gossen



meter for exposure setting, with purse case **£46.53**.

R. F. Hunter Ltd

SILETTE LK SENSOR. Integral exposure meter, coupled with the aperture and shutter speed controls. Agfa Color Agnar 45mm f/2.8 lens. Brightline frame finder with parallax marks. Shutter 1/30 to 1/300sec plus B. Agfa easy load system. Lever wind operates film transport and rewinding. Feet/metre focussing and depth-of-field scale. Flash contact shoe. Price **£35.18**.

Agfa-Gevaert Ltd

SELECTRONIC & SELECTRONIC S SENSOR. Compact with a shake-preventing Sensor release and Agfa rapid loading system. Brightline finder with parallax marks and control scales for shutter speed and aperture, as well as tripod symbol for exposures longer than 1/30 sec. CdS controlled electronics; both shutter speed and



aperture can be preset by the user. Electronically controlled Agfa Paratricon time-slit shutter with infinitely variable exposure times of 15 sec to 1/500sec at apertures between f/2.8 and f/22. Lenses are: Selectronic Sensor; Apotar 45mm f/2.8. Selectronic S Sensor; Solinar 45mm f/2.8 (4 element).



Selectronic Sensor; Scale in feet and metres; distance symbols visible in viewfinder. Selectronic S Sensor; Integral coupled superimposed image range finder. Electronics are automatically set to 1/30 sec when inserting the flash unit. Price approx. **£70** and **£90**.

Agfa-Gevaert Ltd

OPTIMA 200 SENSOR. Fully automatic. Continuous adjustment of shutter speeds and lens apertures, 1/30

to 1/200sec, f/2.8 to f/22. Agfa Color Apotar 42mm f/2.8 lens. Brightline frame finder with parallax marks and green/red go/no-go signal. Agfa easy load system. Lever wind operates film transport and rewinding. Focus in symbols, metres and feet. Novel automatic flash devices. When inserting a flashgun shutter is automatically set to the correct speed and focussing scale is coupled to the aperture control. 'Hot-shoe' contact. Price **£40.55**.

Agfa-Gevaert Ltd

OPTIMA 500 SENSOR. Fully automatic. Continuous adjustment of shutter speeds and lens apertures via CdS metering system, 1/30 to 1/500sec, f/2.8 and f/22 plus B. Agfa Color Apotar f/2.8 42mm lens. Brightline frame finder with parallax marks. Agfa easy load system. Lever wind operates film transport and rewinding. Scaled in metres, feet and symbols. Shoe contact. Automatic flash device as in Sensor 200. Price **£49.73**.

Agfa-Gevaert Ltd

YASHICA MINISTER D Yashinon 45mm f/2.8 lens. Copal SVL 10-speed shutter. Uncoupled 3-sensor CdS



exposure meter. Coupled rangefinder in bright-line viewfinder. Automatic parallax correction. **£48.74** including case.

Photax (London) Ltd

YASHICA ELECTRO M5. Yashinon 45mm f/2.8 lens. Electronically controlled shutter with speeds from



8secs to 1/1000sec. Wide ASA speed range. Coupled rangefinder. Automatic parallax correction. **£52.36** including case.

Photax (London) Ltd

YASHICA ELECTRO 35 CC. Compact full-frame 35mm electronic camera. 35mm f/1.8 Color-Yashinon DX wide angle lens. Electronic shutter 8 to 1/250sec. Infinitely variable speeds. Electronic brain exposure system with warning arrows. Bright-line viewfinder. Black finish. **£69.99** including case.

Photax (London) Ltd

YASHICA ELECTRO 35 GS.



Color-Yashinon DX 45mm f/1.7 lens. Electronic shutter 30 to 1/500sec continuously variable. Electronic brain exposure system. Coupled rangefinder. Automatic parallax correction. ASA 25-1000. Satin chrome and black finish. **£76** including case.

Photax (London) Ltd

YASHICA ELECTRO 35 GTS OUTFIT. Color-Yashinon DX 45mm f/1.7 lens. Electronic shutter 30 to 1/500sec. Continuously variable speeds. Electronic brain exposure system. Warning arrows in viewfinder etc. Coupled rangefinder. Automatic parallax correction. ASA 25-1000. All black finish. Mini-tripod for shoulder, wall or base support. Complete with folding rubber lens hood and semi-hard case. **£86.52**.

Photax (London) Ltd

YASHICA ELECTRO 35 GTS KIT. As above but with hard lens hood, black soft leather case, telephoto and wide-angle auxiliary lenses (with special viewfinder), type 1A and 80B filters and cable release. **£144.76**.

Photax (London) Ltd

ZEISS IKON S.310 Electronic exposure control. The camera automatically chooses shutter speed for the pre-selected aperture. Speeds 10-



1/500sec. With Tessar 40mm f/2.8 lens. ASA range 25-400. X-sync. (1/30sec). Self-timer. **£87.47**.

Johnsons of Hendon Ltd

ZORKI 4. f/2 Jupiter six-element lens focal length 50mm. Minimum focusing distance 1m. Coupled rangefinder-viewfinder incorporating diopter focusing eyepiece. Shutter speeds from 1 to 1/1000sec. Variable flash synchronization B self-timer. interchangeable lens Leica thread, accepts Leica-Canon type lenses and accessories. **£22.21** including case.

Technical and Optical Equipment Ltd

35mm SLR

ASAHI PENTAX SPOTMATIC II. Eye level pentaprism reflex with ttl metering by two CdS cells in the prism housing. Needle alignment sets exposure with lens at taking aperture:



meter mechanically coupled to shutter and film speed. Standard lens is a 55mm f/1.8 Super Multi Coated

Takumar; focal plane shutter 1sec to 1/1000. **£163.63**. Case **£8.40**.

Rank Photographic Ltd

ASAHI PENTAX SPOTMATIC 500. Similar specification to Spotmatic camera but without delayed action mechanism, and shutter speed limited to 1/500sec. With 55mm f/2 Super Takumar lens **£122.66**.

Rank Photographic

CANON FT/QL. Single lens reflex with TTL metering. CdS meter measures the light on the centre portion of the screen. Meter needle visible in viewfinder. Microprism focussing screen. Instant return mirror and automatic diaphragm.



Fully synchronized, delayed action, battery checker. Uses Canon Quick Load system. Single stroke lever wind. Complete range of interchangeable lenses. Accepts light meter booster allowing readings of EV-3.5 to be obtained. Shutter 1 to 1/1000sec and B. ASA 25 to 12500. With 50mm f/1.8 lens chrome **£139.44**, black **£147.80**. 50mm f/1.4 chrome **£171.74**, black **£177.07**. 55mm f/1.2, **£201.65** in black **£207**.

J. J. Silber Ltd

CANON FTb QL. As FT QL but featuring the added advantages of ttl full aperture metering. Hot shoe flash contact and newly designed and colour



coated Canon FD series lenses providing automatic exposures with flash using the CAT (Canon Automatic Tuning) device. With 50mm f/1.8 **£161.87**. Case **£6.41**.

J. J. Silber Ltd

CANON EXEE. 35mm single lens reflex with automatic exposure, through-lens and manual override. Bright viewfinder, Canon QL shutter



system, 1/8 to 1/500sec. Has 50mm f/1.8 lens with interchangeable front element. **£95.14** inc. case, 35mm f/3.5 lens **£28.92**, 95mm lens **£37.85**, 125mm f/3.5 **£60.43**.

J. J. Silber Ltd

CANON F-1. Single lens reflex CdS metering at full or stopped-down

aperture using centre of screen area. Titanium focal plane shutter speeded 1sec-1/2000 and B. Newly designed and colour coated FD series lenses.



Other features include interchangeable screens and pentaprism, fully automatic meter booster, servo meter, motor drive, bulk film back and auto flash system. Price with pentaprism and 50mm f/1.8 **£288.55**, 50mm f/1.4 **£319.64**, 55mm f/1.2 **£373.80**. Case **£9.91**.

J. J. Silber Ltd

CONTAREX S. CdS exposure meter, selective ttl metering cross-coupled to aperture and speeds, visible in viewfinder and on top of the camera,



focal plane shutter 1 to 1/1000sec plus B, quick loading device, self-timer, interchangeable focussing screens, instant return mirror, slot for data recording strips. Takes interchangeable magazine backs. Body **£405.50**, lenses from **£77.55**.

Johnsons of Hendon Ltd

CONTAREX S ELECTRONIC. Built-in CdS ttl exposure meter, electronically controlled shutter with speeds from 1 to 1/1000sec plus B, all apertures and



shutter speeds visible in viewfinder, and top housing — provision for use of motor back, remote control and specialist accessories. Body **£496.46**. Lenses from **£77.55**.

Johnsons of Hendon Ltd

EDIXA 2MTL. With dual cell ttl metering. Shutter speeds from 1 to 1/1000sec and B. Synchronized for XM flash. Prism viewfinder with microprism



focus spot. Single stroke lever wind. Instant return mirror and fully automatic diaphragm. Takes Edixa screw interchangeable lenses. All-black finish. With

f/2.8 lens **£117.69** with f/1.8 lens **£128.33**, with f/1.4 lens **£149.74**. Body only **£96.19**.

Paul Plus Ltd

EXAKTA RTL 1000. Available in two versions with standard pentaprism or tti metering pentaprism. Interchangeable screens. Metal focal-plane shutter with



vertical traverse, 8 to 1/1000sec plus B. DA on speeds down to 2sec. Two releases. Synchronized 1/125 electronic or 1/30 bulbs. With 50mm f/1.8 Oreston six-element FAD lens, bayonet mount, focussing to 1.1ft. Shutter lock, film type and speed reminder, rewinder, rewind crank, self-resetting counter, tripod bush. With standard pentaprism, screen and Oreston lens **£79.50**, tti prism, screen and Oreston lens **£99.50**. Waist level finder separately **£5.95**.

C.Z. Scientific Instruments Ltd

FUJICA ST701. Focal plane shutter having rubberised blinds. 1sec to 1/1000. Plus a 2sec time set via B and delayed action. Exposure meter — through-the-lens stop down readings,



centrally weighted. Interlinked with shutter speeds. Electronic and bulb flash; contact via twin outlet sockets. With 55mm f/1.8 Fujinon Lens **£132.50**; 55mm f/1.4 Fujinon Lens **£168.50**.

Hanimex (UK) Ltd

LEICAFLEX SL. With dual-cell TTL metering, measuring 6% of scene for spot metering. Match-needles in finder, also shutter speed indicator. Controls grouped for right hand. Quick return, braked mirror, focal plane shutter, synchronizes electronic at 1/1000, with times from 1 to 1/2000sec. Quick-load spool, auto resetting counter, bayonet fitting lenses, wide range of accessories including motor drive, selftimer, etc. With 50mm Summicron-R f/2 lens, **£423.65**. ER case **£14.96**.

E. Leitz (Instruments) Ltd

MINOLTA SRT101. CLC full aperture metering system with two CdS cells. Film-speed meter range 6 to 6,400



ASA. Instant-return mirror; focal plane shutter from 1sec to 1/500sec plus B; X synchronization from 1sec to 1/60. FP synchronization on all speeds; mirror lock for 22mm lens; depth of field preview button; self-timer; auto-reset frame counter; recessed film crank; accessory shoe. Viewfinder shows microprism focus spot, exposure meter "match-needle" and shutter speed scale. With f/1.4 MC Rokkor PF (6 elements) **£169.95**, with 55mm f/1.7 lens, **£153.95**, with f/1.2 lens, **£206.95**. With black bodies, f/1.7 lens, **£163.95**, f/1.4 **£179.95**, f/1.2, **£216.95**, body only, black, **£118.95**. Silver body, **£108.95**.

Japanese Cameras Ltd

MINOLTA SR-M. Motorised SLR camera which features power rewind in addition to forward drive. Shoots three frames per second, can be set for a specific number of exposures to be fired in a series or can be used for single auto



wind-on shooting. Speeds from 1sec to 1/1000 and B. FP and X synchro terminals, auto mirror, 55mm f/5.7 Auto Rokkor lens, prism viewfinder with microprism focussing, detachable hand grip. Accessories include 250 exposure back, time lapse units, mains power lead, remote control cords and many other items. Price **£468.95**.

Japanese Cameras Ltd

MIRANDA LABOREC II KIT. Designed for photomacrography. 1sec to 1/125 and B focal plane shutter. X synchronization, interchangeable viewfinders, oversize film advance knob,



detachable back cover, interchangeable focussing screens, instant return mirror. Kit includes scope meter, critical focus finder, microscope adapter and cable release. Miranda Laborec II Kit **£79.95**.

Mayfair Photographic Suppliers (London) Ltd.

MIRANDA LABOREC ELECTRO D. Similar specification to the Laborec II with the added facility of electric motor drive. Powered by re-chargeable battery or direct from mains. Electro D **£164.95**.

Mayfair Photographic Suppliers (London) Ltd.

MIRANDA SENSOREX II. Measures exposure through the lens at full aperture, or working aperture, over selections spot or average reading. The CdS spot occupies 4.5 per cent of mirror area in line with optional axis. Auto switch to flash (X synchro) on 1/60. Auto Miranda f/1.9 lens (six elements) focussing to 17in. Shutter 1/1000 to 1sec and B, synchronized PF and also D.A. Hot-shoe. Eye-level pentaprism with waist-level or magnifying view-



finder available, also different screens. Quick-return mirror. Film speeds 25 to 1,600 ASA. With f/1.8 lens **£117.95**. With f/1.4 lens **£135.95**. Case **£8.95**, f/1.8 Black Sensorax **£138.95**. Silver Sensorax, body only **£102.95**.

Mayfair Photographic Suppliers (London) Ltd.

MIRANDA SENSOMAT RE-1. tti metering with on-the-mirror CdS cell. Prism viewfinder with microprism focussing. Interchangeable viewfinders and screens. 1sec to 1/1000 focal plane shutter. Dual lens mount. f/2.8 Auto Miranda lens. Auto frame counter, leverwind. Camera retains tti metering with all viewfinders. Takes Miranda system accessories. FP and X synchro terminals. **£89.95**.

Mayfair Photographic Suppliers (London) Ltd.

MIRANDA SENSORET. Compact with programmed electronic shutter. Bright frame viewfinder with exposure signals and f/stops. "Use flash" indication, 38mm f/2.8 lens, coupled rangefinder focussing. Flashing coupled to EE system for auto switch over to flash in dim lighting. Auto frame counter, leverwind, and synchro socket, rapid load spool. **£57.95**. Case **£2.47**. Special MK-3 flashgun **£8.75**.

Mayfair Photographic Suppliers (London) Ltd.

MIRANDA SENSOMAT RE Stopped down tti metering. Automatic Miranda lenses with a choice of f/1.8 or f/1.4 standard lenses. Prism viewfinder with micro prism focus spot. Prism viewfinder removes to interchange with four accessory viewfinders; screens interchange. Camera retains tti metering with all viewfinders and screens. Focal



plane shutter from 1sec to 1/1000, dual lens mount for Miranda bayonet and 44mm screw, single stroke leverwind, fold-away rewind crank, hinge-open back. Takes Miranda system lenses and accessories. Miranda Sensomat RE with f/1.8 Auto Miranda lens **£91.95**. Miranda Sensomat RE with f/1.4 Auto Miranda lens **£109.95** f/1.8 model Black Finish **£105.95**. Body only — Silver **£76.95**. ER, **£8.95**.

Mayfair Photographic Suppliers (London) Ltd.

MIRANDA SENSOMAT RS. Interchangeable viewfinders and screens, shutter speeds from 1sec to 1/1000 and B, 50mm f/1.8. Auto Miranda lens, equipped with prism viewfinder with micro prism focus spot, single stroke leverwind, hinge-open back, multi-slot take-up spool for easy film loading, FP and X synchro terminals, auto mirror, auto diaphragm. Takes Miranda system



lenses and accessories. Miranda Sensomat RS with 50mm f/1.8. Miranda lens **£79.95**. Case **£8.95**.

Mayfair Photographic Suppliers (London) Ltd.

MIRANDA AUTO SENSOREX EE. tti metering and fully automatic exposure control. Wide-open aperture measuring, on-the-mirror metering cell, selective or total format readings, auto mirror, f-number in viewfinder, split-image rangefinder focussing, prism viewfinder. Viewfinder and screen interchange with several others and the camera retains



full tti metering with every combination. 50mm f/1.8 6-element Auto Miranda lens. Self-timer, cord and hot-shoe synchro, Miranda dual lens mount with bayonet and 44mm screw thread, focal plane shutter from 1sec to 1/1000 and B. Takes Miranda system lenses and accessories. Miranda Auto Sensurex EE with f/1.8 Auto Miranda lens **£152.95**. f/1.4 model **£170.95**. Case **£8.95**.

Mayfair Photographic Suppliers (London) Ltd.

NIKKORMAT FTN. Has a centre-weighted through-the-lens metering system cross-coupled to aperture and shutter speed controls. The CdS meter can be set from ASA 12-1,600. The all-metal focal plane shutter is speeded 1 to 1/1000sec plus B, and allows electronic flash at speeds up to 1/125sec. Almost all the accessories and lenses in the extensive Nikon system can be used. With f/2 lens, **£175.59**.

Nikon Division, Rank Audio Visual

NIKON F. Pentaprism with split-image R/F interchangeable with W/L finder and alternative screens. Range of interchangeable lenses from 8mm to 1,200mm, and four zoom lenses, F/P shutter 1 to 1/1000sec, T and B, D.A.; lever-wind; crank rewind; self-zeroing frame counter; colour-coded flash synchronized; accepts very large range of accessories including electric motor drive. Price, with 50mm f/1.4 Auto-Nikkor, **£269.38**; with 50mm f/2 Auto-Nikkor, **£228.46**.

Nikon Division, Rank Audio Visual

NIKON PHOTOMIC FTn. Through-the-lens metering version of Nikon F achieved by fitting Photomic FTn head in place of standard pentaprism. With f/2 50mm Nikkor Auto lens **£269.40**. With f/1.4 50mm Nikkor Auto lens **£311.89**.

Nikon Division, Rank Audio Visual

NIKON F2. Pentaprism camera with interchangeable viewfinders and focussing screens. Shutter speeds 10sec-1/2000. Hinged, detachable camera back accepts camera loadings of 36 or

ZODEL SLR. Takes Praktica/Asahi Pentax size screw thread lenses. Copal square metal focal plane shutter, 1 to 1/1000sec plus B; M and X sync, electronic at 1/125sec. Film speeds



ASA 25 to 1600. Lever wind, crank rewind, self-resetting counter, film type reminder, self-timer, Pentaprism with microprism focussing tti metering from 2 CdS cells in finder. Black finish. With 50mm f/1.8 six-element Cosinon focussing down to 18in. £89.75. E.R. case £4.75.

Wallace Heaton

ZENITH B f/2. Quick-return mirror. Fitted with 58mm f/2 Helios six-element lens, minimum focussing distance 18in. Interchangeable with all Edixa/Pentax



fitting lenses. Focal plane shutter 1/30 to 1/500 and B, X and M flash synchronized. Single stroke lever wind advances film and resets shutter, delayed action mechanism. £32.42.

Technical & Optical Equipment Ltd

ZENITH B f/3.5. As B f/2 but with 50mm f/3.5 four-element Industar. £23.39.

Technical & Optical Equipment Ltd

ZENITH E. Exposure meter ASA 20-650. Focal plane shutter, 1/30 to 1/500sec and B-XM synchronized, also delayed action. Single stroke lever wind.



Detachable accessory shoe. 58mm Helios 44 f/2 six-element coated lens (manual pre-set iris) interchangeable with all Edixa/Pentax fittings lenses. With case £42.33.

Technical & Optical Equipment Ltd

ROLL FILM CAMERAS

BRONICA S2a 6 x 6cm single lens reflex, with interchangeable lens, interchangeable viewing prisms, interchangeable film backs. Camera accepts 120 roll film (12 exposures) and 220 roll film (24). Shutter; vertically operating focal plane with single shutter dial 1 to 1/1000 plus B. Quick-return mirror. Helical focussing system. Standard lens 75mm f/2.8 Nikkor (FAD, bayonet). Camera body made of 18-8 stainless steel, black leatherette cover. Takes many accessories for complete system including Zenzanon lenses, Nikkor lenses, tubes, bellows, grips, exposure meters. With lens, body, 120 back and 220 facility, Fresnel lens and large magnifying viewfinder, stainless slide for separating back from camera and neck strap, standard and black model £299.

Apparatus & Instrument Co Ltd

FUJICA G690/BL. Coupled rangefinder interchangeable lens camera with a frame size of 6 x 9cm. It accepts 120 (eight exposures) and 220 (16 exposures) roll film plus 2 1/4 x 3 1/4 in. sheet film for one shot exposures. Two-stroke lever on camera top advances film, cocks shutter, and locks to prevent



double exposure. Between-the-lens shutter-B, 1-1/500sec, built-in MX contacts for all speed flash synchronization. The viewfinder is side-window-illuminated bright frame with automatic parallax correction. Double image coupled rangefinder/viewfinder. Fujica G690/BL camera with 100mm f/3.5 (standard lens) with eyecup £253.00.

Hanimex (UK) Ltd

LUBITEL 2. Twin-lens reflex, 12 on 120, plano-convex lens with ground-glass central spot for focussing. Hinged



magnifier. Shutter 1/15 to 1/250sec and D.A., X synchronized. Lens 75mm f/4.5. With case £6.95.

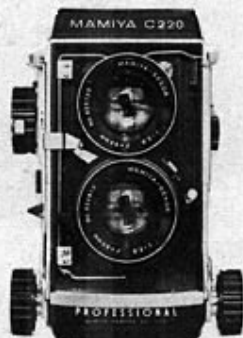
Technical & Optical Equipment Ltd

HASSELBLAD 500C/M. 6 x 6cm single-lens reflex camera. The standard

80mm Zeiss Planar f/2.8 lens has a fully synchronized between-lens shutter. Film magazine supplied with the camera takes 12 on 120 film. Lens, magazine, focussing screen, focussing hood and winder knob are all interchangeable, and an extensive range of lenses, magazines and accessories is available. Price (inclusive of 25% purchase tax) £343.65.

Group (I & E) Ltd

MAMIYAFLEX C220. Twin lens reflex roll film camera, accepting 120 or 220 size film. Basically as C330 but fewer



automatic features. Interchangeable 80mm f/3.7 Sekor lenses. Film transport with interlock device but independent shutter tensioning. £155.

Pullin Photographic Ltd

MAMIYAFLEX C330. Twin lens reflex camera. Using 120 or 220 type film on a 6 x 6cm format. Folding crank rewind, parallax correction and automatic shutter cocking; fitted with interchangeable Mamiya-Sekor 80mm f/2.8 lenses.



Focussing screen is interchangeable for one of six types of screens and the shutter release is duplicated on the front as well as on the side. It accepts a range of interchangeable lenses from 55mm to 250mm focal length. £205.

Pullin Photographic Ltd

MAMIYA RB67. Large format SLR with waist level viewfinder providing negative size 6 x 7cm on 120 or 220 film. Interchangeable lenses, each with built-in leaf shutter for full flash synchronization. Revolving back allows choice of upright or horizontal picture. Interchangeable viewing screens. Magazine loading. With 127mm f/3.8 lens £380.

Pullin Photographic Ltd

MAMIYA PRESS SUPER 23. For sheet, plate or roll film use providing negative size 6 x 9cm interchangeable lenses each with built-in shutter; coupled rangefinder; tilting back. With



100mm f/3.5 lens, focussing screen, back and handgrip. £205.

Pullin Photographic Ltd

MINOLTA AUTOCORD. Twin lenses on common panel; lever operated controls, numbers seen through top window; lever focussing below panel to 3ft 3in. with infra-red indicator; semi-automatic film loading; film winding crank (R.H.) operating counter and cocking shutter; film loaded in top



and take-up spool at bottom of camera, avoid bending film before entering F/P; collapsible hood; large magnifier; field lens screen; sports finder; release plunger threaded for cable and permits intentional double exposure; 1/500sec; f/3.2 viewing lens and 75mm f/3.5 Rokkor four-element taking lens; double bayonet fitting. £73.95. Case £6.36.

Japanese Cameras Ltd

NORITA 66. Single lens reflex using 6 x 6cm format taking 120 and 220 film. Has instant return mirror, focal plane shutter (11 speeds) 1sec-1/500sec plus



B and X (1/40sec flash synchro). Double or multiple exposure switch. Supplied as standard with eye-level pentaprism and 80mm f/2.6-element auto lens £261.73. Case £8.54. Cradle £12.80.

J. J. Silber Ltd.

PENTACON SIX. 6 x 6cm SLR giving 12 exposures on 120, 24 exposures on 220 film. With automatic frame counter, 80mm f/2.8 Biometer 5 element lens. (58mm screw filter size). Fully automatic diaphragm. Focussing from 1m to infinity. Focal plane shutter, speeded from 1sec to 1/1000sec and B, X synchronized. Built in delayed action. Interchangeable lenses in bayonet fitting. Lever wind transport. Removable hood incorporating a sports finder and magnifier. Removable Fresnel focussing screen. Available in two versions of camera outfit. Pentacon Six TL with waist level finder, Biometer lens £149. Pentacon Six TL with pentaprism and Biometer £174.50.

C. Z. Scientific Instruments Ltd

PENTAX 6 x 7. 6 x 7cm giving 10 exposures on 120 or 21 exp on 220 film, picture size 55 x 70mm. Focal plane shutter running 1sec to 1/1000 plus B and X flash contact. Shutter times electronically controlled. Standard 105mm f/2.4 Super Takumar lens interchangeable with lenses from 35mm to 1000mm. Pentaprism interchangeable with tti prism, waist level hood.

250 exposures. Wide range of lenses and accessories. With f/1.4 lens **£345.37**. Case **£14.47**.

Nikon Division, Rank Audio Visual

NIKON PHOTOMIC F2. Through the lens metering version of F2 achieved by



fitting photomic F2 head in place of standard pentaprism. With f/1.4 lens **£412.58**. Case **£14.47**.

Nikon Division, Rank Audio Visual

OLYMPUS FTL. 42mm thread lenses, full-aperture metering and viewing with lens centering lock. Standard lenses: 50mm f/1.8 F Zuiko Auto-S (6 elements, 5 groups), 50mm f/1.4 G Zuiko Auto-S (7 elements, 6 groups). Ttl with Olympus Auto lenses (stop-down method with non-Olympus 42mm thread lenses). Matched needle measuring system with red warning signal for insufficient light. CdS meter cell on both sides of the eyepiece. Focal plane shutter, 11 speeds, 1sec to 1/1000 with B, about 10sec delayed action. X and FP contacts with switch. Hot-shoe accessory contact or pc cord. Pentaprism type with microprism centre spot on Fresnel screen. Magnification 0.92 with standard 50mm lenses. Meter needle, follow pointer and battery check mark in viewfinder. Film speed scale ASA 25-2000. Built-in battery checker on camera. Filter size 49mm screw (standard, W/A and tele lenses). With f/1.8 **£135.50**. f/1.4, **£155.50**. Case **£8.62**.

David Williams (Cine Equipment) Ltd.

PETRI FLEX V6. System camera FP shutter speeded 1 to 1/500sec, B and selftimer. Microprism focussing.



With bayonet mount. With six element f/1.8 55mm lens. Auto diaphragm. Clip-on CdS meter available which couples to the shutter speed dial. **£84.34**, ER case **£8.34**, meter **£16.67**.

Johnsons of Hendon Ltd.

PETRI FT II. ttl metering operated at the taking aperture. FP shutter speeded 1 to 1/1000sec, B and self timer. Microprism focussing. With six element 55mm f/1.8 lens FAD. Hot shoe and cable contacts. ASA 25-1600. **£121.53**, ER case **£8.34**.

Johnsons of Hendon Ltd.

PETRI FT EE. Auto exposure control via ttl open aperture metering system. Manual override. f/number in use visible

in viewfinder. ASA 25-800. Microprism focussing. FP shutter speeded 1 to 1/500sec, B and self timer. With 6 element 55mm f/1.8 lens. Range of special EE lenses available. **£121.81**. ER case **£8.34**.

Johnsons of Hendon Ltd.

PRAKTIKA L. Vertical focal-plane, steel shutter with electronic synchronization at 1/125sec and speeds from 1 to 1/1000. Shoe contact, lever wind. Fresnel screen with microprism spot and



metering. Sign in finder when not wound on. Interchangeable lenses on Praktika screw fitting. With Tessar 50mm f/2.8 FAD, **£54.90**, with Meyer Oreston 50mm f/1.8 FAD, **£64.90**, with Zeiss Pancolar 50mm f/1.8 FAD, **£79.90**. Case **£4.95**.

C.Z. Scientific Instruments Ltd.

PRAKTIKA LLC. Similar to the Praktika L in specification but with built in ttl metering at full aperture via LLC range of lenses. Other Praktika lenses may be used with the stop down method. Price with Meyer Oreston 50mm f/1.8 FAD lens and PX 21 battery. Chrome **£94.90**, with f/1.8 Pancolar **£104.90**. Black body with Oreston **£99.90**, with Pancolar **£109.90**. Case **£4.95**.

C.Z. Scientific Instruments Ltd

PRAKTIKA LTL. Similar to above, but with ttl metering using the stop down aperture method. Centre weighted. With 50mm f/2.8 Domiplan **£64.90**, with f/2.8 Tessar **£74.90**, with f/1.8 Pentacon-Auto (Oreston) **£84.90**, with f/1.8 Pancolar **£99.90**. The same camera without delayed action mechanism, less £2 on the above prices.

C.Z. Scientific Instruments Ltd

PRINZFLEX 500 f/3.5 fitted 50mm f/3.5 Industar lens. Shutter speeds range from 1/30 to 1/500sec. XM flash synchronized focal plane shutter. Self timer. Interchangeable lenses on Pentax/Praktika thread. **£17.95**. Case **£2.90**.

Dixons Photographic Ltd

PRINZFLEX 500 f/2. Fitted 58mm 6-element f/2 Helios lens focussing down



to 18in. approx. Focal plane shutter speeded 1/30 to 1/500sec. XM flash synchronisation. Delayed action release. **£28.95**. Case **£2.90**.

Dixons Photographic Ltd

PRINZFLEX 500E. Similar to Prinzflex 500 f/2 but incorporating also selenium



exposure meter calibrated for film speeds from ASA 20-650. **£37.95**. Case **£2.90**.

Dixons Photographic Ltd

PRINZFLEX SUPER T.T.L. Ttl exposure control. Six-element 50mm Prinzflex f/1.7. Fully interchangeable lens system with Pentax/Edixa type thread. Automatic preset aperture



setting. Copal 1 to 1/1000sec focal plane shutter with synch. Self-timer, rapid lever wind. Double exposure prevention. Auto-resetting film counter. Chrome or Black body. With f/1.7 or f/1.4, six-element, 50mm lenses. Prinzflex f/1.7 chrome or black **£76.95**. Prinzflex f/1.4 chrome or black **£85.95**. Case **£5.25**.

Dixons Photographic Ltd

REGULA REFLEX 2000 CTL; TTL metering with dual cell control. Cds sensing cells in the viewfinder. Takes 42mm screw-in lenses. Instant return mirror, auto diaphragm, delayed action, easy film loading system, ASA 3-6400. Focal plane shutter speeded 1sec to 1/2000. Shutter speed scale in viewfinder. Micro prism focus pentaprism. Hot-shoe synchro. Regula Reflex 2000 CTL with 50mm f/2.8 Cassaron **£114.95**, with 50mm f/1.9 Westromat **£131.95**, with 50mm f/1.9 Xenon **£155.95** or case **£5.36**.

Photopia Limited.

ROLLEIFLEX SL35. Pentaprism with matched twin CdS cell at either side of the eyepiece. 50mm Zeiss Planar f/1.8 lens (FAD). Rollei quick change bayonet mount. Meter cross coupled with speed and aperture. Focal plane shutter 1 to



1000sec and B. Electronic flash synchronization at 1/60. Range of interchangeable lenses. Aperture range f/1.8 to f/16 with half stop click settings. Closest focussing distance 45cm. Black or chrome model. **£199.70**.

R. F. Hunter Ltd

TOPCON RE SUPER D. ttl CdS metering. Lens mount is interchangeable

bayonet with internal diaphragm and meter coupling. Focal plane shutter 1sec-1/1000 plus B and delayed action. FP and X sync via single outlet. Positive stop instant return mirror coupled with lens diaphragm and shutter. Mirror can be locked up. Pentaprism and focussing screen is interchangeable and other screens and viewfinders are available.



Ttl meter cell is attached behind (and is integral part of mirror). ASA 25-1600 with semi-automatic match needle system reading at full aperture. An extensive range of accessories is available including motor drive and bulk film magazine. With 58mm f/1.8 6 element RE Auto Topcor **£199**. With 58mm f/1.4 7 element RE Auto Topcor **£255**. Extra for black body. **£10.50**. Hard leather case. **£9.50**.

AICO Ltd

TOPCON UNIREX. Fully automatic or manual exposure control by ttl meter with spot or average metering to choice. Fixed pentaprism with microprism



screen behind the lens diaphragm shutter 1sec-500 plus B, full range X M flash sync. With 50mm f/2 UV-Topcor 6 element lens, in black or satin chrome finish. **£119**. Hard leather case. **£8.50**.

AICO Ltd

TOPCON UNIREX EE. As Unirex but with spot metering. With 50mm f/2 UV-Topcor **£99**. With 50mm f/2.8 UV-Topcor **£89**. Case **£6.50**.

AICO Ltd

YASHICA TL ELECTRO-X ITS. Standard screw thread giving wide range of interchangeable telephoto and wide angle lenses as well as 12 Yashinons which include: macro and zoom. Electronic shutter with vertical focal plane blind giving infinitely variable speeds from 2sec to 1/1000. Through



the lens metering with electrical method which avoids needle system. Illuminated exposure arrows in viewfinder. Microprism and ground glass focusing. Independent mirror lock. Complete range of accessories. f/1.7 model, **£169.94** including case. f/1.4 model, **£183.24** including case. f/1.2 model, **£213.95** including case.

Photax (London) Ltd



etc. Lever-wind. Black finish. Price complete with pentaprism **£456.37**.
Rank Photographic Ltd

TELE-ROLLEIFLEX. Fitted with Zeiss Sonnar 135mm five-element f/4 taking lens and f/4 Heidosmat finder lens. Has basic features of Rolleiflex 2.8F but long focal length lens give 1.7 x magnification. Equipped with optically



flat glass ensuring plate-like flatness of film to ensure most critical enlargements. Focuses to 8.5ft with or without exposure meter. Accessories: Exposure meter for later installation. **£380.69**. Special Rolleinar lens set 0.35, and special Rolleinar lens 0.7 available. Other accessories same as Rolleiflex 2.8F.

R. F. Hunter Ltd

ROLLEIFLEX SL66. Single lens reflex has its own bellows extension, "Focal Depth Tilt", interchangeable lenses, focussing hoods, focussing screens and



magazines taking 12 and 24 exposures on 120 or 220 roll film. Lenses in quick-change bayonet mount with click-stop and automatic diaphragm. With Zeiss Planar 80mm f/2.8 lens, case. **£647.56**.

R. F. Hunter Ltd

ROLLEICORD Vb. Lenses mounted on common panel, focussing by large central knob or left-hand operation. Adjustable film speed indicator incorporated; removable folding hood with magnifier and frame finder; automatic parallax correction; Rolleiclear split-image focussing screen; automatic film transport with knob wind. Viewing



lens f/3.2; taking lens 75mm f/3.5 Xenar in Synchro-Compur with coupled exposure value scale in single cocking-release lever below shutter housing; lever speed and aperture controls with windows in side of shutter housing; exposure table; double bayonet lens, mounts size 1; separate counter assemblies available permitting either 16 exposures 4 x 4cm or 4 x 5.5cm on 120 film, or 24 exposures 28 x 40mm size and 24 x 36mm on standard 120 film. Accessories: Exposure counter assemblies, plate back, Rolleikin for 35mm film, panorama head, lenshood, filters, supplementary lenses, Pentaprism, Mutar, etc. **£118.07**.

R. F. Hunter Ltd

ROLLEIFLEX T. Inexpensive version of Rolleiflex. Automatic speed and stop cross coupling with E. V., the single lever also permitting independent adjustment. Crank operated film transport coupled with shutter loading; semi-automatic film loading; closing back engages film transport mechanism and counter, double exposure preventer.



Auxiliary masking set permits alternative negative sizes and film counter automatically switches from 12- to 16-exposure operation with 4 x 4 or 4 x 5.5cm mask is inserted; automatic parallax correction for all sizes. Focussing hood with hinged sides and detachable for placing masks under screen. Uses Rolleiclear split-image focussing screen. Plunger release, film reminder disc. Black finish, exposure meter, Synchro-Compur MXV shutter with 75mm f/3.5 Zeiss Tessar four-element lens. Without exposure meter but provision for later installation if required, masking set No. 16. Wide range of accessories available including Mutar tele lens. **£187.28**.

R. F. Hunter Ltd

ROLLEIFLEX 3.5F. General specification similar to model 2.8F., and has the same exposure meter fully coupled with Synchro-Compur shutter. Only pre-selection of shutter speed and



superimposing pointer of exposure meter for diaphragm to be automatically selected for given film speed; depth of focus automatically indicated in focussing knob; exposure meter very simply adjusted for film speeds and compensation for filters. Folding-side detachable focussing hood and Rolleiclear split-image focussing screen which can be raised to insert 35mm Rolleikin focussing mask, thus retaining automatic parallax correction. Synchro-Compur MXV and shutter with f/2.8 viewing lens and 75mm f/3.5 Zeiss Planar six-element lens, with coupled exposure meter. **£282.94**.

R. F. Hunter Ltd

ROLLEIFLEX 2.8F. Twin-lens reflex with lenses on common panel; focussing by large knob at side for left-hand operation, with automatic depth of field indicator; removable folding hood incorporating magnifier and frame finder permitting eye-level focussing; Rolleiclear split-image focussing screen; automatic parallax correction; automatic film loading and feeder mechanism; crank film transport coupled to shutter setting; double exposure preventer (disengageable); camera back has adjustable pressure plate for either 6 x 6cm 35mm film; plunger release; wheel controls for speed and diaphragm with setting window above viewing lens; interlocked for exposure values; Synchro-Compur shutter with E.V. scale (4-18); flash connection socket with lock; double bayonet mounts size III; viewing lens; f/2.8, exposure meter light cell fitted along front main panel and coupled to aperture and shutter speed but is disengageable. With 80mm f/2.8 Zeiss Planar five element lens.

Accessories: plate back, 35mm film adaptor slides; hood; filters; supplementary lenses, Mutar tele lens, metal and leather cases; flash equipment and attachment for high definition work (consisting of special camera back and optically flat glass). **£323.69**.

R. F. Hunter Ltd

YASHICAMAT 124G. f/3.5 Yashinon



80mm taking lens, with f/2.8 viewing lens. Copal shutter 1sec to 1/500. XM flash synchronization, built in CdS meter coupled to aperture/shutter controls. Automatic lever wind film transport. Magnifier. Fresnel focussing screen. Direct finder. 120 and 220. All black finish with leather trim. Wheel aperture/shutter speed setting. **£96.78** including E.R. case.

Photax (London) Ltd

YASHICA 635. Dual format for 12 x 6cm on 120 or 36 exposures 24 x 36mm on 35mm film; semi-automatic film transport; built-in rewind device for



35mm film; wheel controls for aperture and shutter setting; Fresnel focussing screen; magnifier, direct finder, 35mm conversion kit, 10-speed Copal shutter, 80mm f/3.5 Yashinon four element lens. **£68.96** including case.

Photax (London) Ltd

YASHICA D 80mm f/3.5 Yashinon lens; semi-automatic film transport; 10-speed Copal shutter. **£55.09**.

Photax (London) Ltd

YASHICAMAT. Twin lenses on common panel; automatic lever-wind film transport, shutter and counting; 10-speed Copal shutter; 80mm Yashinon lenses, f/2.8 viewing, f/3.5 taking (four-element); L. H. knob focussing; Fresnel screen; magnifier; direct finder; wheel setting for shutter and stop; bayonet mounts; plunger release with screw-on cable. **£71.31**.

Photax (London) Ltd

ZENITH 80. Single lens reflex for 120 film. Standard lens interchangeable 80mm f/2.8, incorporating semi-automatic preset diaphragm. Metal focal



plane shutter 1 to 1/1000sec; synchronized for bulbs and electronic flash. The camera back, accepting 120 film and incorporating a built-in safety device by means of a stainless steel sheath, is fully interchangeable. Supplied with four filters, lenshood/filter holder, camera strap and leather compartment case. **£135.53**. Plus spare back.

Technical & Optical Equipment Ltd

POLAROID MODEL 340 LAND. Has a plastic body, triplet lens, and electronic shutter with four exposure ranges — two for colour and two for black-and-white. Automatic exposure control from 1/1200 to 10sec. double-window coupled rangefinder/viewfinder with correction for parallax



and built-in mechanical development timer. Timer is preset for film in use and, after pulling exposed film from camera, the user pushes a button. Timer buzzes until development time has elapsed. Takes accessories. **£54.95.**

Polaroid (U.K.) Ltd

POLAROID MODEL 350 LAND. As 340 except that transistorized shutter functions from a single integrated circuit (with gold contacts). Has metal body with brushed-chrome trim. Development



timer is electronic, and actuated by photocell in camera back. It emits a high-pitched tone when picture development has elapsed. Range/viewfinder (by Zeiss Ikon) has a single window with parallax correction. Takes accessories. **£81.95**

Polaroid (U.K.) Ltd

SPECIAL CAMERAS

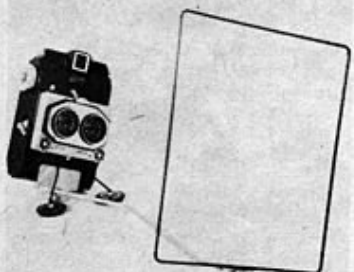
ILOCA STEREO RAPID. Size 23 x 24mm, one stroke lever wind. Takes 28 stereo pairs on standard 36-exposure film, f/2.8 matched Cassar lenses, film counter, single exposure device, X and M flash synchronization, delayed action, coupled rangefinder focussing to 3ft. Shutter speeds from 1 to 1/300sec. Finished in black leather and satin chrome. £75. Leather ever-ready case £6.50.

Duval Studios Ltd

ILOCA STEREO f/3.5. Similar to Stereo Rapid. Has f/3.5 matched Cassar lenses, shutter from 1/25 to 1/200sec, single picture setting device, no stroke lever action. £42. Case £6.50.

Duval Studios Ltd

ISO-DUPLEX STEREO. Matched 35mm f/3.5 lenses, producing 24 stereo pairs of frame size 24 x 25mm, or 48 single pictures from 120 film. Apertures



f/3.5 to f/22. Speeded B, 1/10 to 1/200 XM flash synch. Focus 3ft inf. Removable back. Transport interlock. £45. case, £4.50, film cutter £8.50, close up lenses £9. per pair, close up frame £8.

Duval Studios Ltd

HOLOGON ULTRA WIDE. Fitted with a 15mm lens specially designed for extreme wide angle work without distortion. With a depth of field from 50cm to infinity at the fixed aperture of f/8 no focussing is required. The



acceptance angle of 110° fully covers the 35mm format. The exposure is controlled by a focal plane shutter speeded 1 to 1/500sec with B and T. A built-in spirit level visible on top and in the viewfinder helps avoid converging

verticles. Complete with hand grip, cable release and case. Price on application.

Johnson of Hendon Ltd

HORIZONT. Panoramic camera for wide angle work without distortion and especially useful for groups; gives 20 pictures from a 36 exposure 35mm film,



size 24 x 58mm (enabling projection and enlargement with standard equipment designed for 6 x 6cm format). f/2.8 fixed focus lens. Shutter 1/30 to 1/250sec. Price £52.83.

Technical & Optical Equipment Ltd

POLAROID 545 4 X 5 LAND FILM HOLDER. To fit press cameras with international, spring and lock-rib backs, such as Graphic, MPP, Linhof; holder accepts Polaroid 4 x 5 single-shot Land film packets (including Type 55 which produces both a print and a high-definition negative in 20 seconds). £38.50.

Polaroid (U.K.) Ltd

POLAROID SWINGER II LAND. The least expensive Polaroid camera. Grey and black plastic body. All operations controlled by three buttons — coded red, white and blue. Fixed shutter speed 1/200sec. Exposure control panel in viewfinder reads Yes when lens aperture (f/17 to f/96) is set for correct exposure. Single-element plastic meniscus lens, fixed focus. Separate clip-on accessory



flashgun for AG-1/AG-3 bulbs. Uses Polaroid Type 20 Land rollfilm (45sec development) to produce eight black-and-white prints each 2 1/2 x 3 1/2 in. £5.95.

Polaroid (U.K.) Ltd

POLAROID SUPER SWINGER LAND. Dark brown and black plastic body. Similar lens, shutter, and photometer exposure control to Swinger



II, but uses pack-loading Polaroid Type 87 Land film to make square-format 3 1/2 x 3 1/2 in. pictures (45sec development). Camera has built-in flashgun for AG-1/AG-3 flashbulbs. £7.30.

Polaroid (U.K.) Ltd

POLAROID SQUARE SHOOTER 2 LAND. Black plastic body camera for colour picture-taking only. Uses square-format eight-exposure Polaroid Type 88 Land film packets for 3 1/2 x 3 1/2 in. pictures that develop in approx. 75sec. Three-element 114mm lens, fixed



aperture f/9. Self-cocking double-blade shutter automatically controlled through electric eye — continuously variable exposure control from 1sec to 1/500. Partial over-ride with manual control allows 3-stop adjustment. Built-in flash socket for flashcubes, powered by two 1.5 volt long-life batteries. £13.30.

Polaroid (U.K.) Ltd

POLAROID BIG SHOT LAND. Grey plastic body camera for studio quality portrait and close-up picture-taking only. Uses eight-exposure Polaroid Type 108 Land film packet for 3 1/2 x 4 1/2 in. colour pictures that develop in approx. 75sec.



Single element 220mm meniscus lens (f/29) fixed focus at 38in. Fixed shutter speed 1/60sec — all pictures taken by flash, built-in socket accepts only percussion-type four-shot Magicubes. Fixed distance double-image single-window rangefinder/viewfinder with bright focussing square. £15.30

Polaroid (U.K.) Ltd

POLAROID COLORPACK 80. All plastic body black-textured square format. Uses two eight-exposure film packets — Type 87 (black-and-white ASA 3000 45sec development coaterless) and Type 88 (colour ASA 75 75sec development) to make 3 1/2 x 3 1/2 in. pictures. Electronic shutter for automatic



exposure. Three element lens with fixed aperture settings (f/60 for black-and-white, f/9 for colour). Around the lens focus ring for colour picture-taking, focus can be fixed for monochrome. 5ft distance "image size" in viewfinder. No accessory capability. £16.95.

Polaroid (U.K.) Ltd

POLAROID COLORPACK III. All plastic body, black textured. Uses eight-exposure film packets — Type 107 (black-and-white ASA 3000 15sec development, print needs final coating) and Type 108 (colour ASA 75 75sec development) to make 3 1/2 x 4 1/2 in.



pictures. Electronic shutter for automatic exposure. Uses flashcubes for all indoor pictures. Three-element lens with fixed apertures. Around-the-lens focus ring for colour picture-taking, can be fixed for monochrome. 5ft distance "image size" in viewfinder. Built-in timer for print development. No accessory capability. £23.30.

Polaroid (U.K.) Ltd

POLAROID MODEL 320 LAND. Least expensive of the "300" series. Transistorized electronic shutter for automatic exposure control, two exposure ranges (one for colour and one



for monochrome), two element lens and coupled rangefinder. Limited accessory capability including flashgun for indoor picture-taking, delay action timer, cable release. £35.95.

Polaroid (U.K.) Ltd

POLAROID MODEL 330 LAND. Has two-tone grey body of plastic. A folding camera with automatic exposure control through transistorized electronic shutter



and cell. Triplet lens and double-window coupled-rangefinder/viewfinder. Built-in mechanical development timer that buzzes. Takes accessories including flashgun, timer, and filters. £44.95

Polaroid (U.K.) Ltd