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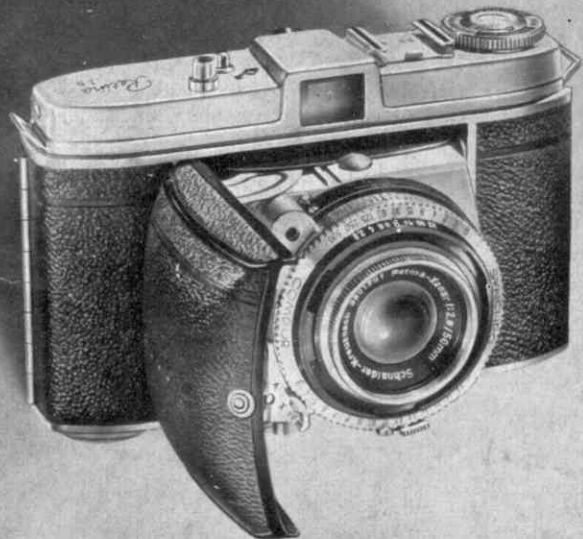
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Kodak
Retina

I b



The KODAK RETINA Ib

is a perfected miniature camera to meet the highest demands. Among the many technical refinements its main features are the new Synchro-Compur shutter with light value settings and self-timer, the large line frame finder, and the collapsible lens panel which locks open absolutely rigidly. This camera will be your companion for many happy hours; in your job, when travelling, at home, in every weather and every season. You can thoroughly rely on it.

The RETINA Ib has been tested according to the strictest standards before it reached you. It combines utmost precision with unsurpassed performance and thus satisfies every possible requirement for the first-

class results. The name KODAK is your guarantee for that.

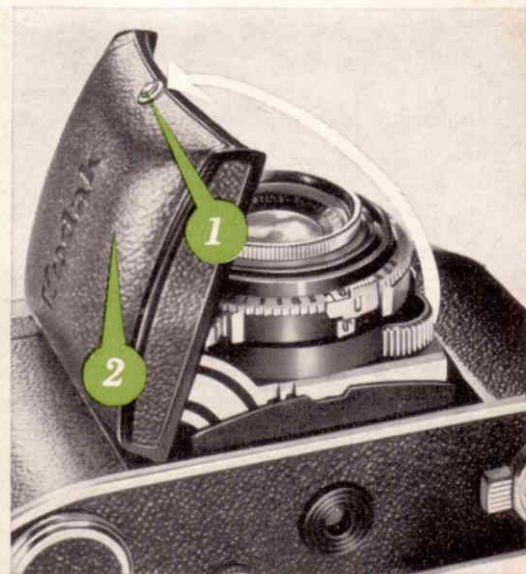
Make the best use of the many advantages of your camera. And here is at once the most important piece of advice: read these instructions specially carefully — whether you are a beginner or an experienced photographer — and practise the operations described first of all without a film in the camera. Then, once you have mastered the elementary manipulation, load the camera with a film and take your first pictures. You will soon realise how easy picture taking is with the RETINA Ib.

KODAK AG. · STUTTGART-WANGEN · GERMANY

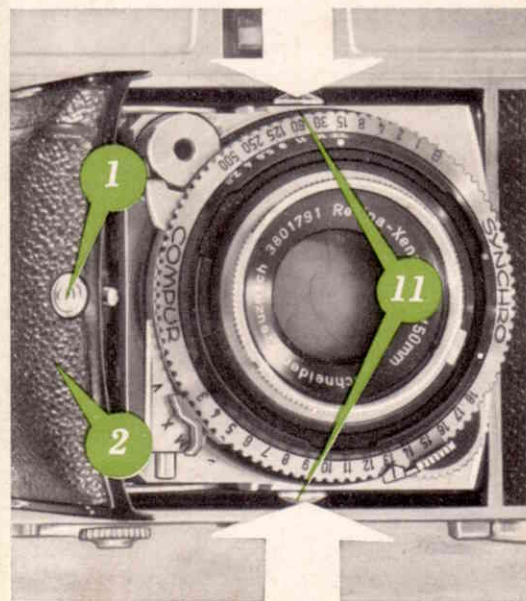
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Hold the RETINA in your hand and push the button (1) towards the word KODAK. At the same time pull open the base-board (2) until it audibly clicks into position. The camera is now ready for shooting.



You can only close the camera when the focusing scale is set to inf. Simultaneously press the two buttons (11) at each side of the lens panel; the base-board (2) will then easily fold up — even with a filter screwed into the lens fitting.



First get to know the



How to hold it . . .

Whenever possible grip the camera with both hands. The illustrations show the positions for horizontal and upright pictures. They are, however, mainly intended as a guide, you can of course hold the camera in other ways too. Try a few positions to find which suits you best. And when you have found your ideal hold, stick to it.

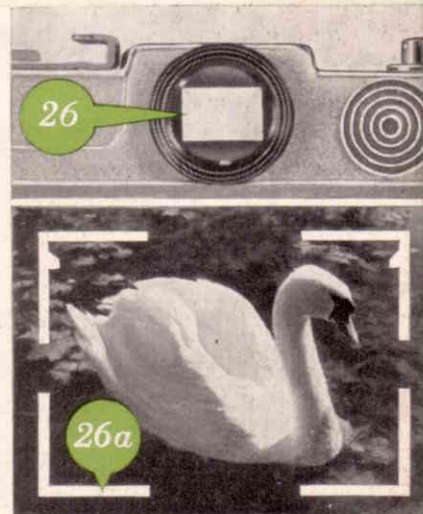
. . . and how to view

Hold the camera in the shooting position and view the subject through the eyepiece (26) of the viewfinder. The subject area is outlined by a brilliant line frame (26 a). This shows the correct field of view and helps

main points of operation

you to sight correctly (see also page 20).

The illustration on the right shows how you must sight a subject in order to get it properly on to the film. The subject is correctly positioned within the frame.



Setting the distance

The focusing scale (13) carries distance figures from 3 feet to infinity. You will find the distance setting index (12) on the depth of field scale (14). Move the focusing knob (17) so as to bring the division corresponding to the subject distance opposite the distance setting index (12).



Your RETINA is now correctly focused. Measure the distance as accurately as possible for distances up to 12 feet. A good way is to pace it, taking one pace as equal to $2\frac{2}{3}$ feet. The distances over 12 feet can be approximate, as the depth of field zone (see page 16) increases so rapidly at greater distances that small errors of estimation become unimportant.

An important feature of your RETINA:

The Synchro-Compur shutter of your RETINA carries the following three scales:

The Shutter Speed Scale (10): The numbers signify fractions of a second, thus 2 stands for $\frac{1}{2}$ second, 15 for $\frac{1}{15}$ second, 125 for $\frac{1}{125}$ second, and so on.

The Aperture Scale (5): The stop numbers indicate relative apertures. The largest stop is f/2.8, the smallest f/22.

The Light Value Scale (16): The red figures from 3 to 18 are the light value settings.

The light value setting required for any shot may be determined from the light value table (pages 26—27), or by means of a photo-electric exposure meter such as the KODALUX L.

To set the light value obtained on the shutter, pull the light value lever (15) slightly outwards and move it to the appropriate light value number. If this light value is outside the range of movement of the light value lever, adjust the ring carrying the light value scale (16) and shutter speed scale (10) accordingly. You can also set in-between light values, e. g. 11.5.

For instance, once you have set the light value to 12, the index mark (9) will indicate one of the following aperture-speed combinations:

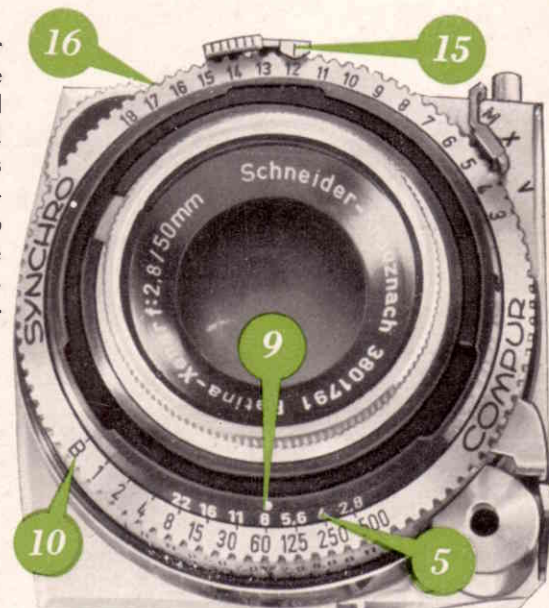
Aperture f/:	22	16	11	8	5.6	4	2.8
Shutter speed in seconds:	$\frac{1}{8}$	$\frac{1}{15}$	$\frac{1}{30}$	$\frac{1}{60}$	$\frac{1}{125}$	$\frac{1}{250}$	$\frac{1}{500}$

If you don't want to use the combination opposite the index mark (9), select the required combination by turning the speed ring. You will notice that this clicks into place at each setting, to ensure accurate shutter speeds. On selecting a faster shutter speed the aperture-speed coupling automatically opens the lens aperture, while adjusting the aperture to a smaller stop alters the shutter setting to a slower speed, thus keeping the exposure constant all the time.

Setting the exposure by light values

If you want to set the exposure without reference to the light value, be sure to set the shutter speed first and the aperture afterwards. If you proceed in the reverse order, setting the shutter speed will also change the aperture, due to the aperture-speed coupling.

To set the shutter speed turn the setting ring until the shutter speed index mark (9) is opposite the required speed. To set the aperture pull the light value setting lever (15) slightly outwards and move it until the desired aperture number is opposite the index mark (9).

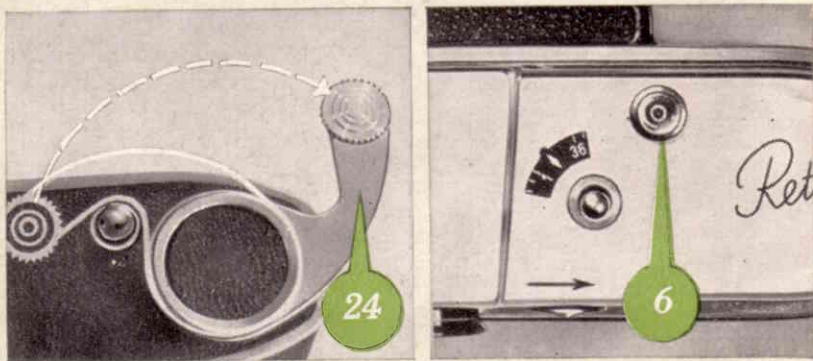


Even if you have set the exposure in this way you can still change either the shutter speed or the aperture as required by turning the speed setting ring as described above.

However, there may be still occasions when the aperture lever comes up against the limit of its movement, when you turn the setting ring to a fast shutter speed or a large aperture. This indicates that the light conditions are inadequate for an exposure with the intended fast speed even at full aperture.

Quick winding and releasing

Put the camera to your eye, sight the subject in the finder, and press the release button (6). You cannot press the button until you have tensioned the shutter. To tension the shutter pull out the rapid winding lever (24) in one movement as far as it will go. Then let it shoot back into its original position. If it does not move back you did not pull out far enough; so



complete the transport movement. This at the same time tensions the shutter, and advances the film and the film counter (see also page 13).

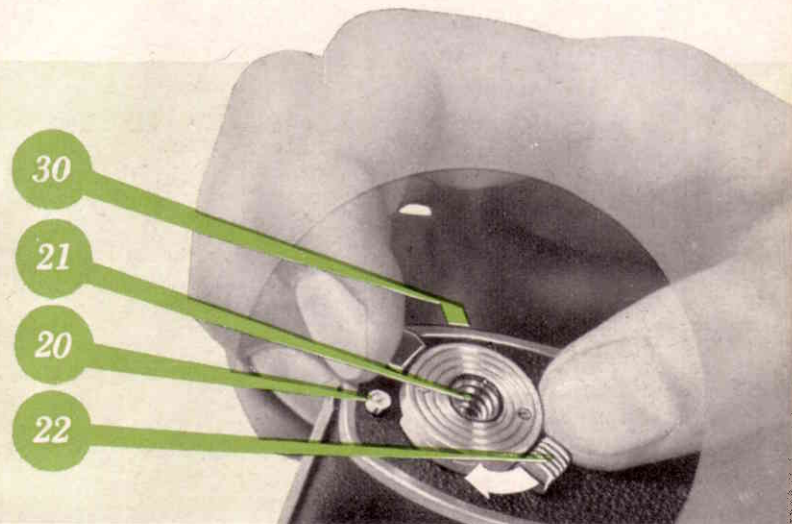
Now you can release. You will notice how smoothly the release button operates; this is important to avoid camera shake. Operate the rapid winding lever immediately after every exposure so as to have your camera always ready for action. Keeping the shutter tensioned — even for some time — does not harm it in any way.

Let's start: Opening the camera back

If you are by now familiar with the most important operations you are ready to load a film and take your first picture.

First, however, check all camera controls once more and make sure that you remember them all.

Before you can load the film you have to open the camera back.

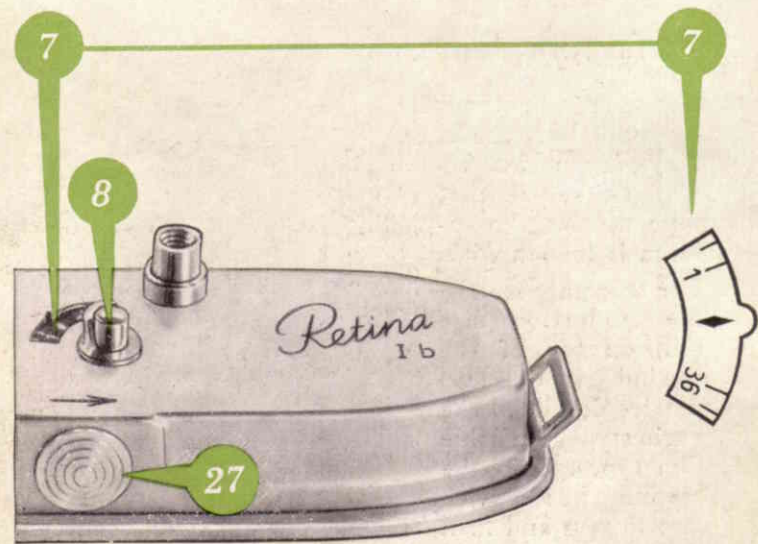
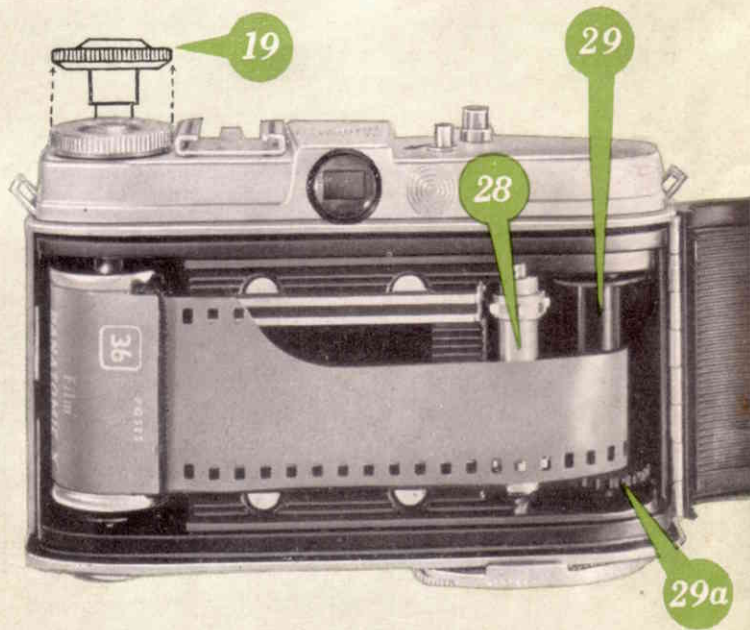


On the bottom of the camera you will find the tripod bush (21). This is surrounded by a double lever (22). If you push the milled end of the lever in the direction of the arrow, the opposite end uncovers a button (20). Depress this button and the camera back (30) will spring open.

This locking system has obvious advantages. You can only open the camera deliberately and not by any accidental movement or knock.

Now insert the film

. . . and set the film counter



To insert the film, fully pull out the rewind knob (19) to its second stop. Turn the built-in take-up spool (29) by its serrated flange (29 a) until the slit in the spool points upwards. Push the trimmed end of the film protruding from the cassette sufficiently far into this slit to anchor it. Then pull the film across the film track and insert the cassette into the cassette chamber. When the film end and cassette are correctly in position, push back the rewind knob, turning it at the same time in the direction of the arrow to tension the film. Make sure that the teeth of the transport sprocket engage the film perforations at both sides. Push the button (27) in the direction of the arrow and at the same time depress the film release button (8).

Repeat this until the diamond-shaped mark \blacklozenge near No. 36 on the film counter (7) is opposite the notch in the upper edge of the film counter window. If you are using a 20-exposure cassette, set to the index mark \blacklozenge between No. 20 and 25.

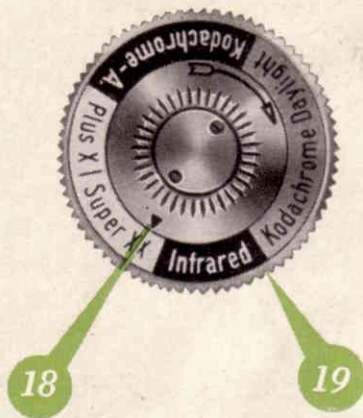
Now work the rapid winding lever and press the film release button (8). Repeat this until the film counter indicates No. 36 or 20 respectively. At the same time the rewind knob (19) should rotate against the direction of the arrow engraved on it. This shows that the film is advancing correctly. When the film counter has reached No. 1, it automatically engages a transport lock. The film release button (8) incorporates a safety catch to prevent accidental operation.

Remember the film speed

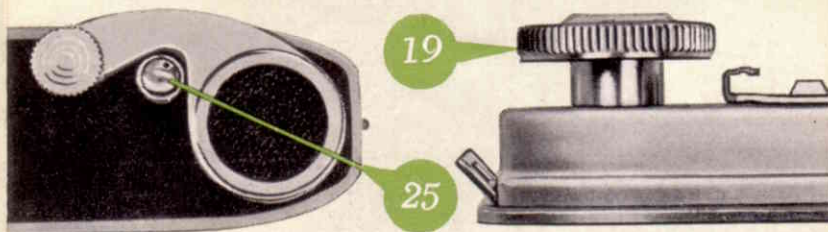
Setting the film indicator

The film indicator is a small but useful reminder which always shows you what type of film the camera is loaded with.

For this purpose the film indicator disc (18) on top of the rewind knob (19) carries details of the various available film types. Grip the rewind knob with two fingers and turn the inner serrated ring with the thumb of the other hand until the triangular index mark ▼ points to the type of the film loaded in the camera. Everything is now ready for taking pictures.



When the film is finished: Unloading



To rewind the exposed film, depress the reversing button (25) in the base of the camera and half pull out the rewind knob (19) (to its first stop) to get at it more easily. Then turn the rewind knob in the direction of the arrow until the reversing button ceases to rotate. This is easily observed by the small black dot near the rim of the button.

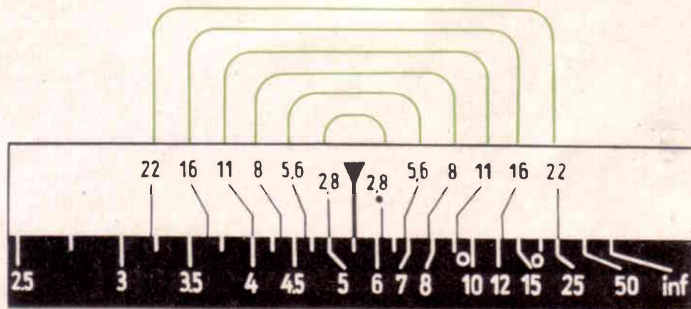
You have now rewound the film into its cassette. Open the camera back, fully pull out the rewind knob, and remove the cassette.

The Film release

If the rapid winding lever should ever lock, pressing the film release button (8) will free it without wasting a frame or causing a double exposure. There may be various reasons for this. For instance, the winding lever will lock if you try out the camera with the shutter set to 1 second and work the lever before the shutter has closed; or if the film counter has reached No. 1. Never use force, but simply press the film release (8), or check whether the film counter indicates No. 1, when you have to unload the film.

Depth of field is as important

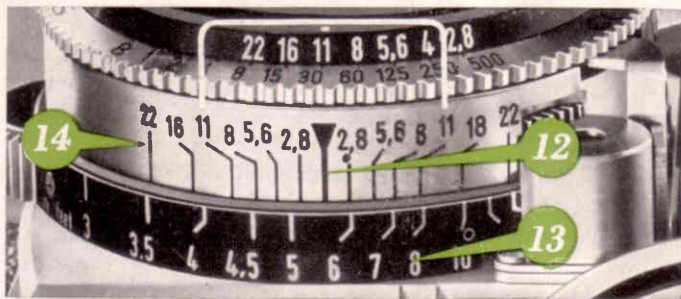
. . . . as zone focusing



The depth of field is an important factor in photography. What does this mean?

The lens reproduces sharply not only that part of the subject on which it is actually focused but also a certain zone in front and behind. This zone is called the depth of field.

The extent of the depth of field increases the more you stop down the lens and also the farther the subject is from the camera. To permit an instant reading of the depth of field for any aperture and distance, a depth



of field scale (14) is arranged symmetrically around the distance index (12).

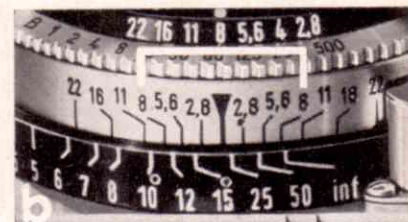
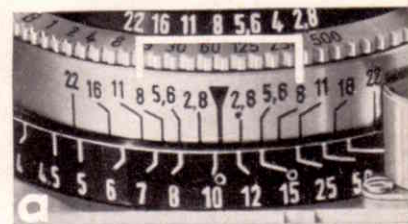
Suppose you have set the aperture to $f/11$ and the distance to $5\frac{1}{2}$ feet. This is how you read off the depth: To the left of the distance index the line corresponding to aperture $f/11$ is opposite $4\frac{1}{4}$ feet, while a similar line to the right of the index points to about 8 feet. With a setting of $5\frac{1}{2}$ feet and aperture $f/11$, you therefore have a depth of field zone extending from $4\frac{1}{4}$ to 8 feet. Within this zone everything will be sharp.

However, you may come across subjects where you just haven't the time to work out the ideal camera setting (as in sports and action shots, children, etc.). For such occasions your RETINA carries zone focus settings.

a. For near subjects set the distance to the small circle near the 10 feet mark and the aperture to $f/8$. This gives you a depth of field from 7 to 20 feet.

b. For more distant subjects use the small circle near the 25 feet mark and an aperture of $f/8$. The depth of field then extends from 11 feet to infinity.

These zone focus settings are, however, only possible in good light. Your KODALUX L exposure meter or the light value table (page 26) should give a light value of at least 12.



Live shots with flash and the built-in self-timer

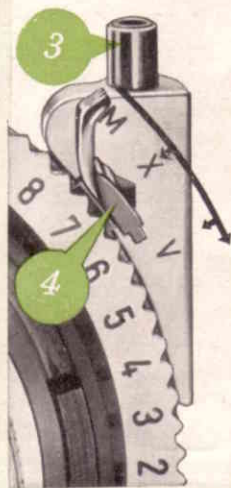
Your RETINA has a speed-synchronized Synchro-Compur shutter. That means that you can take flash shots with flash bulbs or electronic flash units at any shutter speed up to the fastest setting of $1/500$ second.

The holder of the flash socket (3) carries three letters engraved on it: M, X, and V.

M and X are synchronizing settings for flash while V is the self-timer setting.

The three settings are adjusted by means of the green synchronizing lever (4). The flash is fired on releasing the shutter.

The table (right) shows the suitable shutter speeds and the required setting of the synchronizing lever for the different types of flash. The aperture to be used can be obtained from the so-called guide numbers which are included with each package of flash bulbs. Divide this guide number by the distance to get the required aperture. For instance, if the guide number is 120 and you are 15 feet from the subject, $120 : 15 = 8$, so you need an aperture of $f/8$.



If you want to include yourself in a shot set the synchronizing lever (4) to V. But first operate the rapid winding lever. Start the self-timer mechanism by pressing the release button. The shutter will go off after about 10 seconds; you therefore have sufficient time to take your place in the picture. Once the self-timer is tensioned, the lever (4) cannot be moved away from V.

If you use the self-timer with flash shots, the camera works with the X-synchronization. As the self-timer runs down the synchronizing lever automatically moves to X. Be sure to use the appropriate shutter speed setting for X-synchronization (see table).

Suitable shutter speeds in seconds

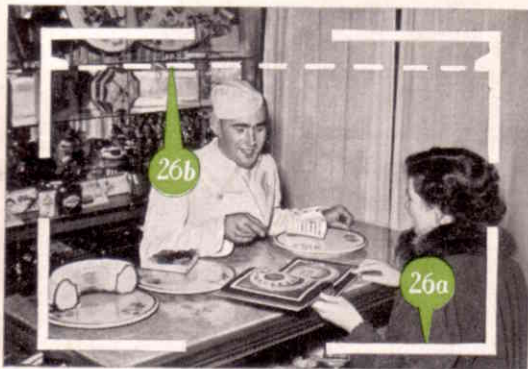
Position of Synchronizing Lever with Flash Bulbs		M		S		Class	X	F
M	X	Type	Make	Type	Make	Kind of Electronic Flash	Instantaneous firing	5 ms firing delay
Shutter faster than flash	Shutter slower than flash	SM	G. E. C., Mazda, G. E., Westingh.	SF	Sylvania	PF 100	1 to $1/500$	1 to $1/125$
Not suitable for speed-synchronization	1 to $1/125$	No. 3	G. E. C., Mazda	No. 50	Philips	No. 5	1 to $1/60$	1 to $1/125$
$1/90$ to $1/500$	1 to $1/15$	X0, XP	Osram	No. 11	G. E. C., Mazda, Westinghouse	No. 11	1 to $1/30$	1 to $1/125$
	1 to $1/15$	S0, XM1	Osram	No. 22	Westinghouse	No. 22	1 to $1/30$	1 to $1/125$
		PF 1	Philips	Press	Sylvania	Press	1 to $1/30$	1 to $1/125$
		PF 14	Philips	No. 25	Sylvania	No. 25	1 to $1/30$	1 to $1/125$
		PF 25	Philips	No. 40	Sylvania	No. 40	1 to $1/30$	1 to $1/125$
		PF 38	Philips	No. 50	Sylvania	No. 50	1 to $1/30$	1 to $1/125$
		PF 60	Philips	No. 0	Sylvania	No. 0	1 to $1/30$	1 to $1/125$
$1/60$ to $1/600$	1 to $1/30$	No. 1	G. E. C., Mazda, Westinghouse	No. 2	Sylvania	No. 2	1 to $1/30$	1 to $1/125$
		No. 5	G. E. C., Mazda, Westinghouse	No. 3	Sylvania	No. 3	1 to $1/30$	1 to $1/125$
		No. 11	Westinghouse	No. 50	G. E. C., Mazda, Westinghouse	No. 50	1 to $1/30$	1 to $1/125$
		No. 22	Westinghouse	No. 3	Sylvania	No. 3	1 to $1/30$	1 to $1/125$
$1/60$ to $1/125$	1 to $1/30$	No. 2	Sylvania	No. 3	Sylvania	No. 3	1 to $1/30$	1 to $1/125$
		PF 100	Philips	No. 50	G. E. C., Mazda, Westinghouse	No. 50	1 to $1/30$	1 to $1/125$
		No. 50	G. E. C., Mazda, Westinghouse	No. 3	Sylvania	No. 3	1 to $1/30$	1 to $1/125$
		No. 3	Sylvania	No. 3	Sylvania	No. 3	1 to $1/30$	1 to $1/125$
Position of Synchronizing Lever with Electronic Flash		M		S		Class	X	F
Synchronizing lever set to X		M		S		Kind of Electronic Flash	Instantaneous firing	5 ms firing delay
1 to $1/500$		1 to $1/30$		1 to $1/15$		Instantaneous firing	1 to $1/500$	1 to $1/125$
1 to $1/125$		1 to $1/30$		1 to $1/15$		5 ms firing delay	1 to $1/500$	1 to $1/125$

Finally, a few more hints

If you have carefully read these instructions you will surely agree that the RETINA I b is very easy to handle. However, if you should still have any doubt on some point, please turn to your photo dealer or get in touch with us. He and we are always at your service. Before you put down this instruction booklet we would like to give you a few more hints.

The line frame finder as an aid to viewing

When you look correctly through the eyepiece of the finder, you will see the brilliant reflected line frame (26 a). It outlines



your picture area and is plainly visible so long as you look straight through the finder and keep your eye close to the eyepiece. This helps you to find the correct field of view.

Parallax

To compensate for parallax with close shots between 3 and 6 feet, imagine a line (dotted in the illustration) between the opposite marks (26 b) in the line frame. With shots at such close range the subject should not go beyond this imagined line between the marks.

for perfect results

Double Exposures

The double exposure lock of the RETINA prevents accidental double exposures. To make a deliberate double exposure for special purposes, press the reversing button (25) after the first exposure and keep it depressed while tensioning the shutter with the rapid winding lever (24). The frictional resistance of the take-up spool (29) keeps the film in position for a second exposure on the same frame.

If you wear glasses

The line frame finder of the RETINA has been designed to give a complete view of the picture area even if you are wearing glasses. Should however your vision be faulty and you do not wear glasses, we can supply a correction lens to fit into the mount of the eyepiece. In that case please let us know the power in diopters (+ or -) required. No correction lenses are available for astigmatism.

Infrared shots

On the right side of the distance index mark (12) there is a small red dot. You use this red dot in place of the black index mark when exposing infra-red film. In other words, turn the focusing knob to bring the red dot opposite the figure for your subject distance. For infra-red shots you must use a suitable infra-red filter in front of the lens.

Take care of your camera

Protect your lens against damage. Especially avoid touching the glass surface with your fingers. Also clean the finder window of your camera from time to time to make sure that you always see the finder image clearly. The best way is to use a soft rag, preferably soft leather.

More scope with accessories

The world-wide fame of the RETINA is based to a large extent on its versatility. We can here only briefly review the wide scope of the RETINA accessories and aids to brilliant pictures.

The Lens Hood and Filters. These are indispensable for obtaining correct tone values in your photographs.

The KODALUX L. This photo-electric exposure meter with two measuring ranges indicates the correct light value as well as shutter speed and aperture.

The Frame Finder Model b. It allows viewing of fast moving subjects in natural size. It provides for parallax compensation and can also be used for close-ups with supplementary N-lenses.

The KODABLITZ. This efficient capacitor flash gun makes the RETINA photographer independent of the light. Extension units can also be connected for extra illumination.

The Close-up Rangefinder. The RETINA close-up rangefinder with its two supplementary N-lenses covers range of close distances between $38\frac{1}{4}$ and 12 inches.

The Close-Up Attachment. The three R-lenses with the close-up attachment permit shots of live subjects or rapid movement at four fixed near distances.

The Table Stand. For subjects which require or permit long exposure times.

The Copying Stand. Use the copying stand if you want to photograph documents, important letters, valuable prints, and the like. Covers two field sizes: $8\frac{1}{4} \times 11\frac{1}{2}$ inches (21×29.7 cm) and $5\frac{3}{4} \times 8\frac{1}{4}$ inches (14.8×21 cm).

The Micro Adaptor. This is the ideal tool for making photomicrographs for all scientific and medical purposes.

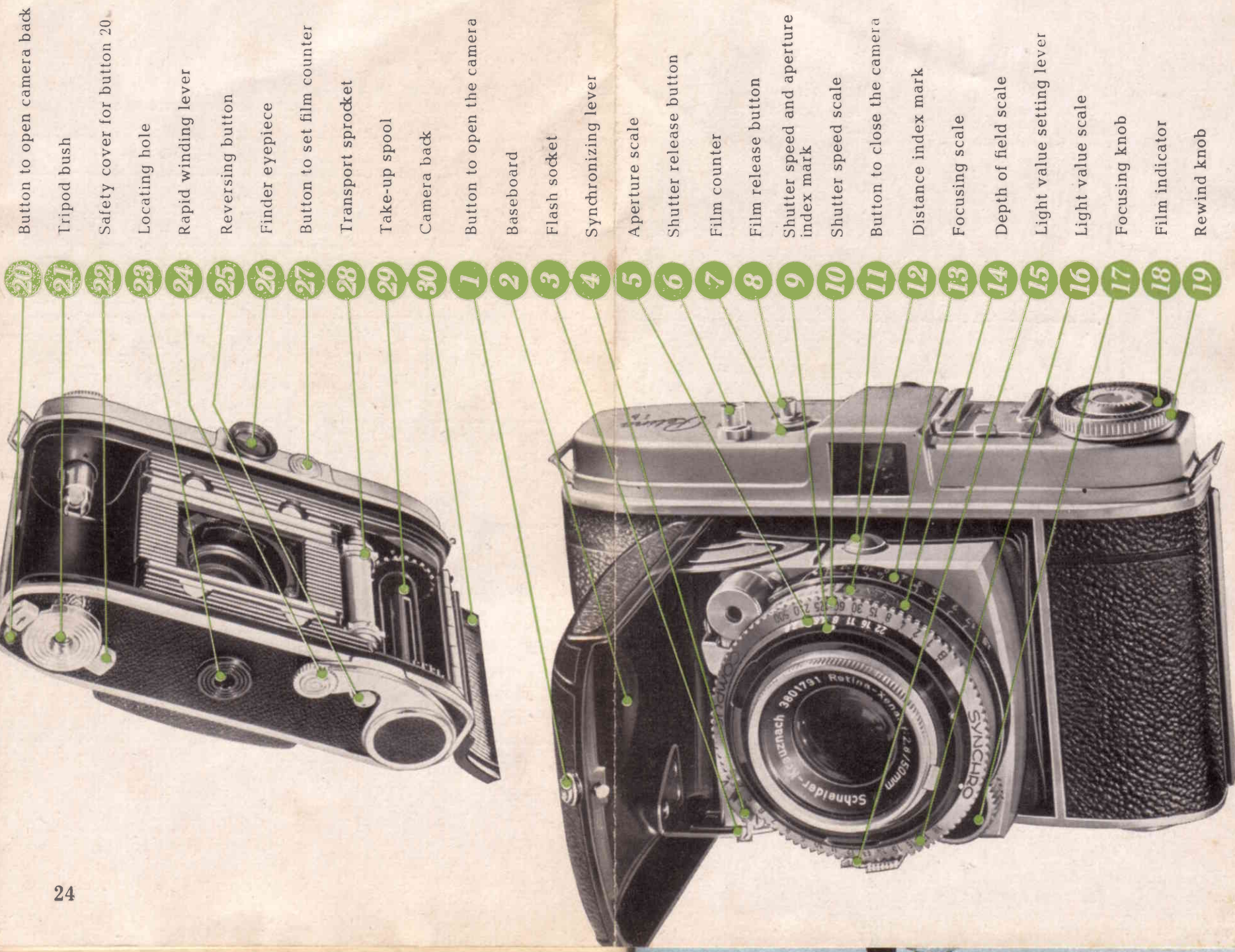
Changing partly exposed films

If you want to unload a partly exposed film (e. g. to change from black-and-white to KODACHROME) re-wind the film into its cassette as described on page 15. However, take care not to draw the trimmed film leader completely into the cassette; stop rewinding immediately when the reversing button (25) ceases to rotate. Also remember to note on the beginning of the film leader the number of the last exposure read off the film counter.

When reloading the partly exposed film, proceed as described on page 12. As before, set the film counter to the \blacklozenge -mark before No. 20 or 36, according to the length of the film. Close the camera back and advance the film by alternately working the rapid winder (24) and pressing the film release button (8). On no account press the shutter release (6)! Carry on until the film counter indicates the same number at which you originally unloaded the film. To be on the safe side, advance the film by an extra frame.

Light value correction with the use of filters









Kodak Filter	Factor	Reduce Light Value Setting by
Light Yellow	F I	$1\frac{1}{2} \times$
Medium Yellow	F II	$2 \times$
Yellow-green	F III	$2 \times$
Orange	F IV	$3 \times$
Red	F V	$7 \times$
Blue	F VI	$2\frac{1}{2} \times$
KODACHROME Daylight Filter		$1\frac{1}{2} \times$
KODACHROME Photoflood Filter		$4 \times$
Polarizing Screen		$2\frac{1}{2} \times$




- 20 Button to open camera back
- 21 Tripod bush
- 22 Safety cover for button 20
- 23 Locating hole
- 24 Rapid winding lever
- 25 Reversing button
- 26 Finder eyepiece
- 27 Button to set film counter
- 28 Transport sprocket
- 29 Take-up spool
- 30 Camera back
- 1 Button to open the camera
- 2 Baseboard
- 3 Flash socket
- 4 Synchronizing lever
- 5 Aperture scale
- 6 Shutter release button
- 7 Film counter
- 8 Film release button
- 9 Shutter speed and aperture index mark
- 10 Shutter speed scale
- 11 Button to close the camera
- 12 Distance index mark
- 13 Focusing scale
- 14 Depth of field scale
- 15 Light value setting lever
- 16 Light value scale
- 17 Focusing knob
- 18 Film indicator
- 19 Rewind knob


RETINA light value table

This table of light values is valid for the months from May to August between 10 a.m. and 4 p.m. The light value should be decreased by 1 for the months of March, April, September and October, or when you take pictures between 9 and 11 a.m. or 4 and 6 p.m. Use 2 values lower for the winter months from November to February.

Features of the Subject If you are in any doubt about classifying the subject brightness, use the row for "Average Subjects"		Film Speed ° BS	ASA Index	Light Values for*							
				Brilliant Sun Clear sky, sharp shadows		Hazy Sun With indi- stinct shadows		Cloudy Bright No sun, no shadows		Cloudy Dark No sun, dark sky	
											
	Brilliant Subjects. Distant views without heavy foreground, light-coloured buildings, figures in mountains and at seaside, all light coloured subjects.	22	10	12	12	11	11	10	10	9	9
		25	20	13	13	12	12	11	11	10	10
		28	40	14		13		12		11	
		31	80	15		14		13		12	
	Average Subjects. People and groups out of doors, buildings and garden scenes (not in the shade), subjects with equal areas of bright and dark.	22	10	11	11,5	10	10,5	9	9,5	8	8,5
		25	20	12	12,5	11	11,5	10	10,5	9	9,5
		28	40	13		12		11		10	
		31	80	14		13		12		11	
	Dark Subjects. People in dark clothes, foliage, deepcoloured flowers, dark animals and buildings.	22	10	10	11	9	10	8	9	7	8
		25	20	11	12	10	11	9	10	8	9
		28	40	12		11		10		9	
		31	80	13		12		11		10	
	Subjects in the Shade, but largely lit by the open sky. The smaller the sky area illuminating the subject, the lower the light value-required.	22	10	8-5,5	8-8,5	7-4,5	7-7,5	6-3,5	6-6,5	5-2,5	5-5,5
		25	20	9-6,5	9-9,5	8-5,5	8-8,5	7-4,5	7-7,5	6-3,5	6-6,5
		28	40	10-7,5		9-6,5		8-5,5		7-4,5	
		31	80	11-8,5		10-7,5		9-6,5		8-5,5	

* These values apply to front lighting. For side lighting reduce light value by 1/2, for back lighting by 1.

 Black- and white film

 Colour film