

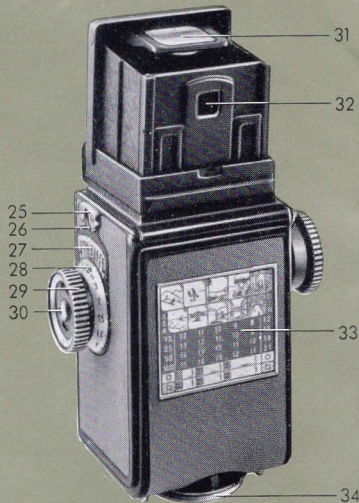
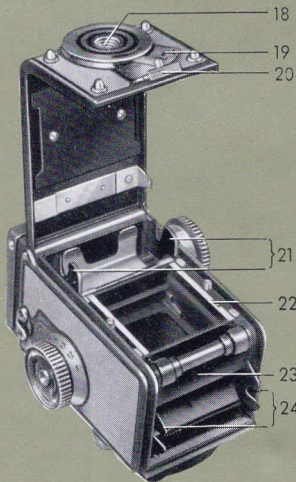
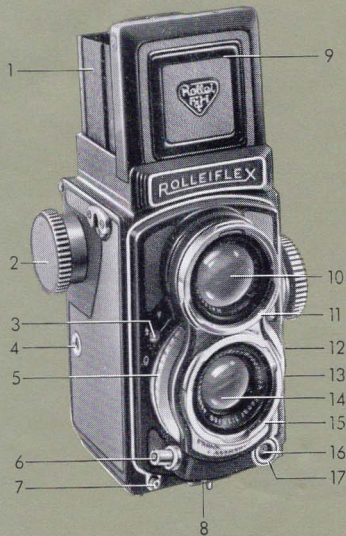
Rolleiflex

4×4

IN PRACTICAL USE

Rolleiflex

4 × 4



D. B. P. u. D. B. G. M. U.S., Brit., Ital., Schweiz., Jap. pat. Brev. s. g. d. g. Pat. pend.

TO LOCATE THE MOST IMPORTANT PARAGRAPHS QUICKLY

(➤ Page)

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DESCRIPTION OF CAMERA

1 Hood	➤ 14	12 Diaphragm control	➤ 12	24 Lower spool space (take-up spool)	➤ 8
2 Film transport knob	➤ 8	13 Shutter speed control	➤ 12	25 Strap holder	➤ 18
3 Synchro lever (also serves as cocking lever for self-timer)	➤ 16, 17	14 Taking lens		26 Catch (safety) for carrying strap	➤ 18
4 Film frame counter window	➤ 7, 9	15 Double bayonet mount for lens accessories* and lens hood		27 Depth of field indicator	➤ 23
5 Light value scale	➤ 12	16 Flash cable socket	➤ 17	28 Focusing scale	➤ 23
6 Shutter release with cable release socket	➤ 16	17 Locking device for flash cord plug	➤ 17	29 Focusing knob	➤ 15
7 Fastening for Rolleiflex and Panorama Head		18 Tripod socket		30 Film type and speed reminder	➤ 9
8 Locking device for Synchro lever	➤ 16, 17	19 Back lock clip	➤ 8	31 Magnifier	➤ 14, 17
9 Direct viewfinder flap	➤ 14, 15	20 Back locking lever	➤ 8	32 Sight for direct viewfinder	➤ 15
10 Viewing lens		21 Upper spool space (empty spool)	➤ 8	33 Light value table	➤ 20
11 Double bayonet for Rolleiflash* and Rolleinar*		22 Automatic film feeler mechanism	➤ 7	34 Fastening groove for eveready case and Rolleiflex	➤ 18
		23 Tab for pivoting spool holders	➤ 8		

* Bayonet size I

The Rolleiflex is extremely simple to use. Nevertheless you should read the instructions beforehand. For those in a hurry, a good start can be made by examining the illustrations, page 7–18. All the necessary operations will be made clear. A more thorough reading of this booklet should follow later. You will also find the most needed tables for your work with the Rollei accessories. It is the aim of this brochure, in the long run, to become a useful complement to your Rolleiflex.

FRANKE & HEIDECHE BRAUNSCHWEIG

A BRIEF ROLLEIFLEX ANATOMY

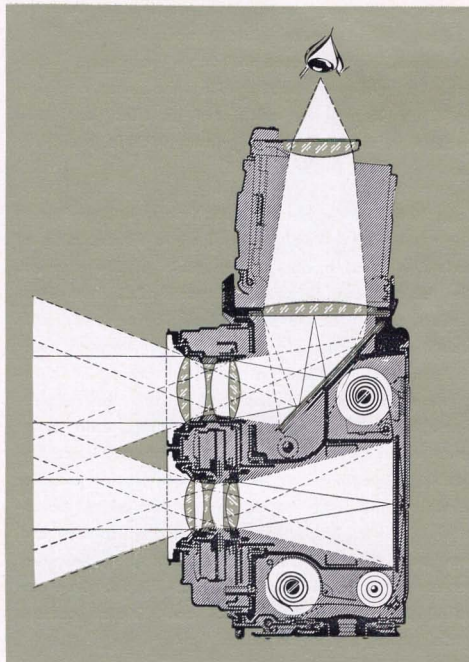
From the Rolleiflex 6 x 6, which from the beginning set the pattern for the development of the twin-lens reflex camera, the Rolleiflex 4 x 4 has taken the basic principles of its construction. Two separate cameras are joined, by means of a common sturdy die cast body, to make a twin camera: below, the **taking camera** for exposing the film and above, the **viewing camera**, using the reflecting mirror principle. The special function of the viewing part of the twin camera is to permit focusing on the ground glass

and to supply a control image essentially similar to the wanted picture. The image forming rays are transmitted by the fully open viewing lens, projected on to the ground glass via the mirror to form a full picture size, right-side-up ground glass image. This viewing image is visible at all times and every detail of composition and framing may be observed, even through the exposure. To recognize and avoid such picture errors as excessively converging lines and off-level horizons, the ground glass is divided into

four squares. The lines provided will enable quick and easy leveling and straightening the camera.

Most importantly, the ground glass serves for direct **focusing** of the image. This is accomplished by rotating the focusing knob. Both lenses, inflexibly coupled by means of a common sturdy front plate, are thereby adjusted simultaneously: a sharp viewing image is a guarantee of an equally sharp picture. Because of the special cam drive (built on the principle of Archimedes spiral) the front of the camera can be racked either in or out with complete uniformity and with complete freedom from play. The focusing range extends from infinity to 40" measured from the film plane to the object. Since the Rollei possesses a fast viewing lens and, in addition, a one sided flat, smooth field lens, extreme focusing sensitivity with great brilliance and clarity is obtained.

The folding hood has a pivoting 4 x **magnifier** for easy checking of sharpness. The inner panel of the front part of the hood folds inward to provide a direct **viewfinder**. The subject can then be observed in natural size for conveniently following fast moving objects.



Parallax is compensated for by a corresponding limiting of the ground glass image. The photograph produced, in every case will have the desired framing. In close-up shots with the supplementary Rolleinar lenses, the additional parallax correction needed is supplied by a prism which is built into the Heidomat Rolleinar.

Both lenses have the same focal length ($f = 60$ mm, angle of picture $= 52^\circ$) for the certain focusing of both the viewing and taking parts of the camera. The taking lens, Schneider Xenar 1:3.5, is a three section, four glass lens (modified Taylor type), with excellent correction for black and white and color photographs. The three glass Heidomat 1:2.8 viewing lens is especially designed to suit the requirements for critical ground glass focusing. Both lenses have abrasion resistant antireflection coatings. The double bayonet rings around the lenses are for attaching the lens hood and optical lens accessories and to hold them in optically correct and firm position. The same size (Size I) filters, lens accessories and RolleiFlash which fit the 6 x 6 cm Rollei Xenar 3.5, Tessar 3.5 and Triotar camera models also fit the RolleiFlex 4 x 4.

The **Synchro-Compur Shutter** is a between-the-lens shutter with evenly graduated speeds from 1/500th to 1 second. It is automatically cocked when the film is wound and can be released only when the camera is ready to shoot; even the viewing hood must be open, since it acts as a shutter safety guard when closed. The shutter is fully synchronized for both electronic and bulb flash guns, up to 1/500th sec. Setting for X or M contact is done with the Synchro lever, which also serves to tension the self-timer.

Coupling the shutter and diaphragm, combined with the use of the Light Value system simplifies exposure setting and also permits rapid changing from one shutter speed-diaphragm combination to another.

Loading the camera with roll film A8—127 has been reduced to the fewest number of operations. Both the full and empty spools can conveniently be inserted into the spring actuated pivoting spool holders. After closing the camera, correct advancing of the film is controlled by the automatic measuring mechanism.

Turning the film wind knob spools up the backing paper leader. When the film itself reaches the feeler pin of the film feeler mechanism, the automatic measuring system is set in motion. From this point on the film knob can be turned only as far as the stop, when it will be seen that the counter has moved from 0 to 1. The camera is ready for the first shot, and only after releasing the shutter can the film knob be wound on, moving one more picture length into position and causing the next number to appear in the counter window. In addition, the shutter is again cocked. This procedure offers complete protection against double exposures or blank frames. Since many kinds of film are available for use in the Rollei, a **film speed reminder** (normally set when loading to any speed between 8 and 800 ASA, 10—30° DIN) has been built into the focusing knob.

When the twelfth and last picture has been taken, the film stop ceases to function; the film knob turns freely to permit complete and rapid winding of the exposed film. Opening the back automatically returns the counter to 0, ready for the next roll.

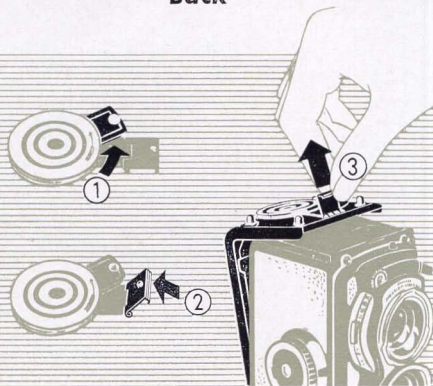
The Eveready Case



For safety's sake
hang by means of
strap from the neck
before opening!

To release: grip
camera at bottom
with right hand,
push with thumb.

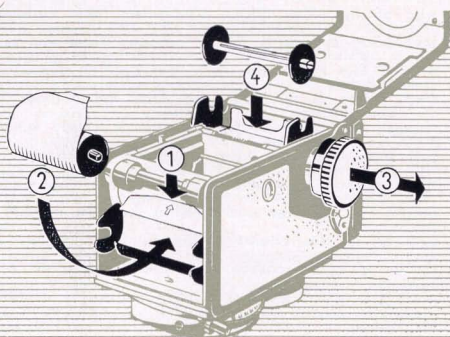
Back



To Open: Slide the back locking lever at the bottom of the camera in the direction of the arrow ① lift the back lock clip ②, and pull open the back ③. The clip serves as a pulling tab.

To Close: Press the back closed with the palm of the hand, push down the clip and slide the locking lever back to original position.

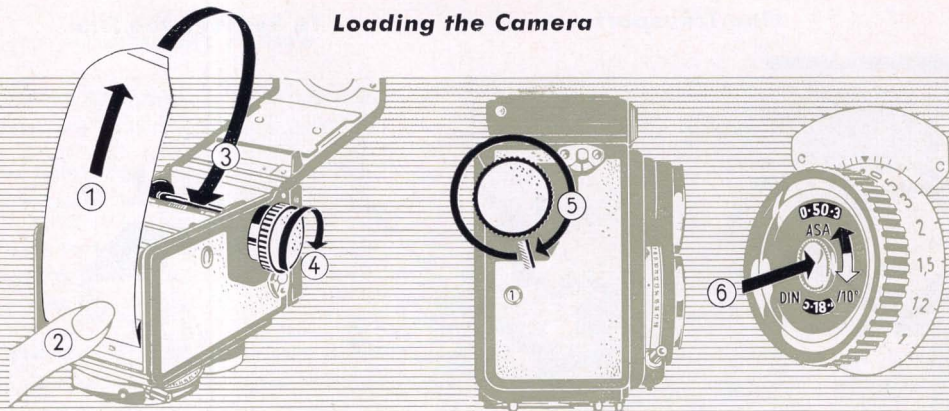
Insertion of Film Spool



A. Lower Chamber (supply spool): Open film holder by pressing red arrow ①, close by inserting and pressing film spool ②.

B. Upper Chamber (take-up spool): Open by pulling out the film wind knob ③. Close by inserting spool, slotted end toward film knob ④.

Loading the Camera

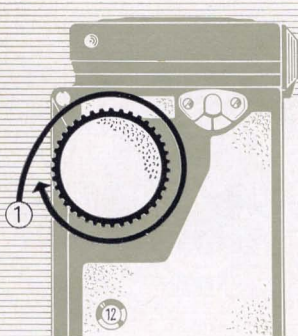


Tear off tape seal as completely as possible. Insert film into lower spool chamber. Draw up paper leader in direction of arrow ① (printed side out), placing thumb on film spool ② to prevent loosening. Insert leader into long side of empty spool slot as far as it goes ③. Wind up tightly, under thumb

pressure ②, by turning transport knob 2—3 times ④. Close back.

Turn the film knob ⑤ until it stops with the counter indicating 1. The shutter will automatically be cocked and the camera is ready for shooting. Set film speed in reminder by pressing knurled knob in center and turning to desired value ⑥.

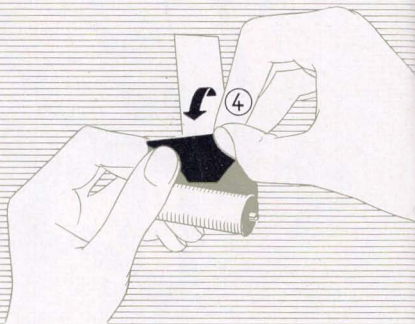
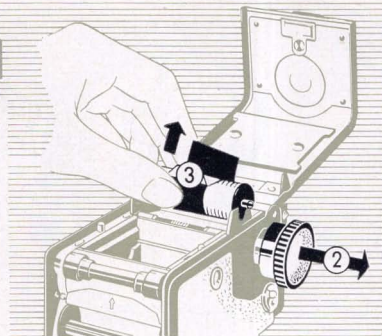
Film Transport



After each exposure wind the film to the next number.

Do not change the film in direct sunlight; use, if need be, the shadow of your own body for protection. Avoid exposing the camera to dust and dirt conditions, clean occasionally with soft brush.

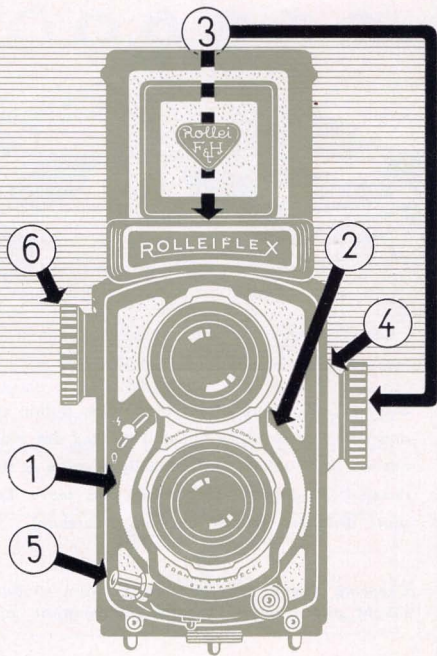
To Remove the Film



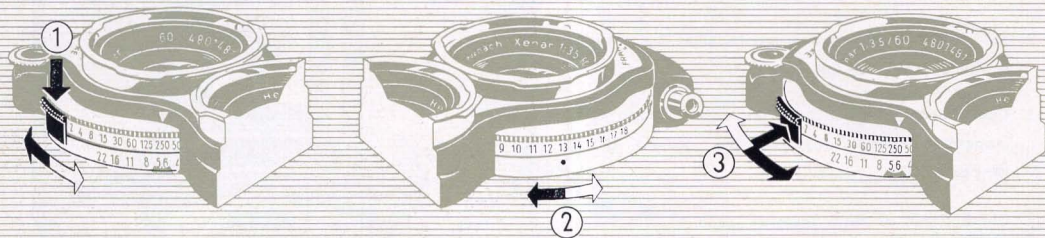
After the twelfth and last shot: Wind up the protective paper fully ①. Open the camera in shade, pull film knob ② and take out the spring lifted film ③. Fold the end of the protective paper (for convenient tearing when developing) ④ and fasten securely with sticker. Preferably, store the exposed film safely in original packing.

Taking the Picture

1. **Ascertain light value**, using exposure table or meter, and set on the red scale (➤ page 12).
2. **Set shutter speed** — keeping in mind the motion of the object (➤ page 21).
3. **Open hood** (caution: shutter safety catch now inoperative) and focus on the ground glass (➤ page 15).
4. **Check depth of field**. Increase zone of sharpness, if need be, by further stopping down the lens or moving back with camera (➤ page 23).
The choice of whether to place prime importance on shutter speed (for greater sharpness of moving objects) or on the diaphragm setting (depth of field) depends, of course, on the subject.
5. **Release the shutter** (➤ page 16).
6. **Wind the film** to the next stop: the camera is once again ready for shooting (➤ page 10).



Light Value – Shutter Speed – Diaphragm Setting



Setting Light Value: Press diaphragm button release and move up or down ① until the red dot indicates desired light value ②. (If the light value is still not reached: re-engage diaphragm and move back a short distance; repeat original procedure).

Special Case: Choosing speed and diaphragm separately.

Rule: First set speed, then diaphragm.

Shutter Speed: Turn setting ring ③ (if necessary move the co-rotating diaphragm in the opposite direction).

Diaphragm: Disengage diaphragm button and turn ①.

Choosing Speed and Diaphragm: Turn shutter ring and diaphragm button together ③ until the sought after speed-diaphragm combination appears opposite the indicator.

Light Value Scale

This is the red scale on the shutter speed ring and the desired values are set to the red dot on the diaphragm ring. Midpoint light values can be used. Each lower light value indicates double the exposure.

Shutter Speed Scale

The black numbers are for instantaneous speeds, in fractions of a second (for example 30 = 1/30th sec.). Half values between numbers cannot be used. The figures for each shutter-diaphragm combination, when chosen, must be set to center of indicator.

1/60th sec. is the most frequently used speed, reducing effect of camera motion.

For sharpness of moving objects: ➤ table page 21

The green letter "B" is for time exposures (➤ page 16). The green numbers aid in calculating exposures somewhat longer than 1 sec. (➤ page 19).



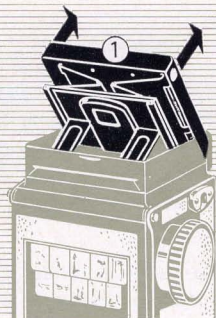
Diaphragm Scale

Half (dots between figures) as well as full (4 to 22) diaphragm stops can be set. The line next to diaphragm 4 indicates 3.5, a mid-point stop between $f : 4$ and $f : 2.8$ in the international diaphragm scale. Half stops are obtained when working with half light values.

Both speed and diaphragm scales are evenly divided so that each figure represents half or double the one before. As is shown by the shutter speed-diaphragm combinations, closing the diaphragm one stop requires double the exposure duration (see chart).

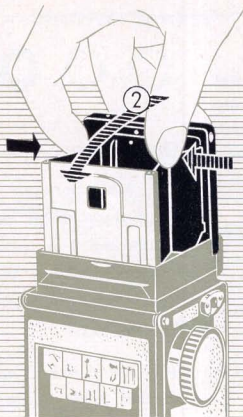
Tripod Pictures										Hand-Held Pictures							
Time Exposure (➤ page 19)								Slow Speeds					Fast Speeds				
125	60	30	15	8	4	B		1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500 sec.

Hood

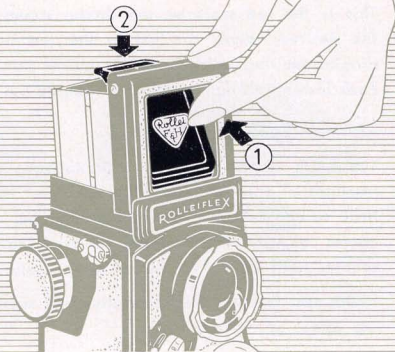


To Open: Lift back edge of hood and raise cover panel to vertical position ①. Caution: shutter safety now in off position!

To Close: Press sides inward, simultaneously pulling back cover panel ②; press closed. Shutter release locked.



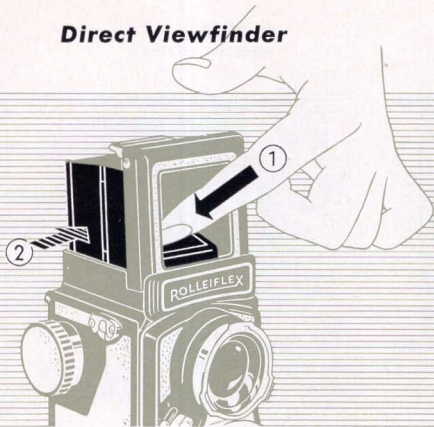
Magnifier



To Open: Press direct viewfinder panel inward; magnifier automatically springs into position ①.

To Close (Before closing hood): Push magnifier down ②.

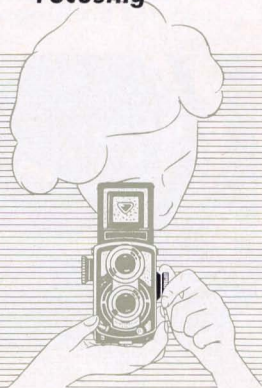
Direct Viewfinder



To Open: Press the center panel of the front of the hood inward until it catches ①.

To Close: Press lightly on the right hood panel ②. The direct viewfinder panel instantly returns.

Focusing

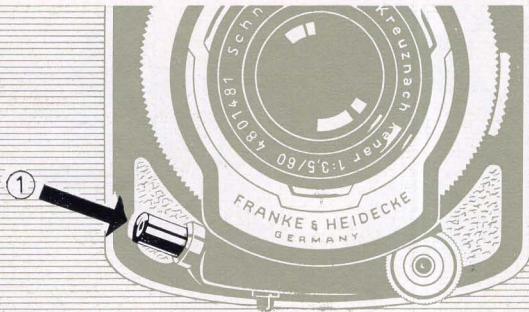


Turn the focusing knob while simultaneously examining the image for sharpness on the ground glass through the magnifier. The distance scale on the focusing knob should be consulted only when checking depth of field (➤ page 23).

General Rule for Focusing:

Be sure that the principal area in the subject is the one in sharpest focus!

To Release Shutter

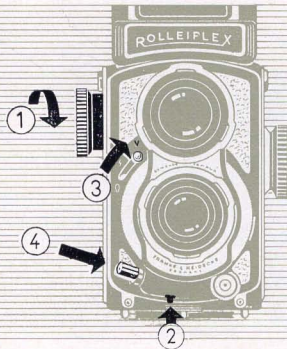


With Focusing Hood Open

Instantaneous Exposure: Press shutter release smoothly ①. Shutter will automatically open for length of time set.

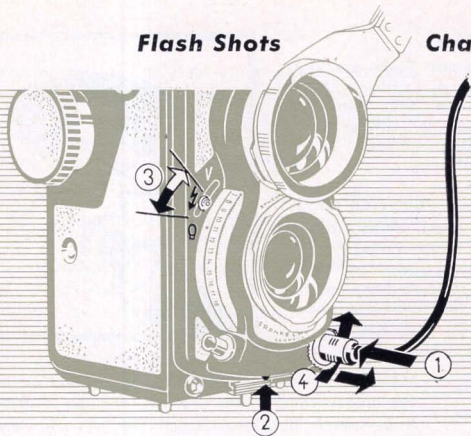
Time Exposure "B": Press the release and hold for desired interval. Shutter closes when release is allowed to return to normal.

Self-Timer



Cock shutter ①. Unlock Synchro-lever ② and set on "V" ③. Release ④. The shutter will open approximately 10 seconds after releasing. All speeds from 1/500th to 1 sec. can be used. Shutter and self-timer can remain cocked, when camera is not in use, without undue weakening of the springs. Caution! Do not move Synchro-lever ③ without pressing release button ②.

Flash Shots

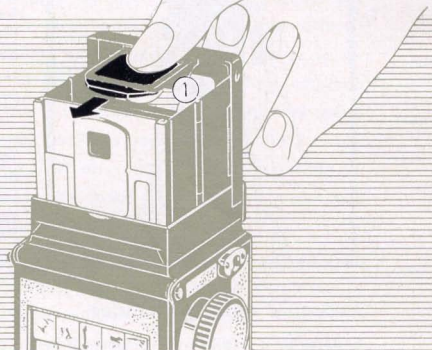


Attaching Cable: Insert tip into flash contact socket ①; locks automatically.

Choice of Contact Setting: Depending upon light source (page 30) unlock Synchro-lever ② and set it to O (M contact) or X (X contact, also usable for self-timer flash shots) ③.

To Detach Cable: Turn small locking wheel ④ and pull out cord tip.

Changing Magnifiers for Faulty Vision



Various magnifiers ranging from $+3$ to -3 diopters, are available for users who prefer to use camera without glasses. (Specify prescription for glasses.)

To Change: With the direct viewfinder open, pull out ① the magnifier, pressing a bit downward and backward.

To Install: Insert magnifier between holder and springs.

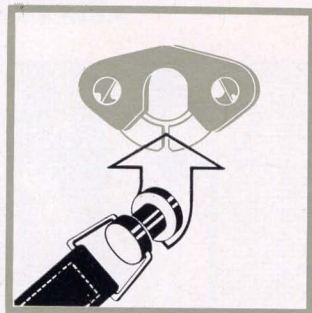


Eveready Case

To insert camera: Slide grooved base plate of camera from the rear into the retaining device until it catches. To remove: Slide camera backwards out of case.

Carrying Strap

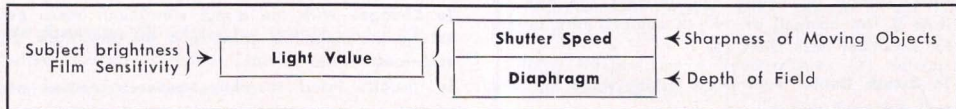
To attach: press down safety blades on strap holder with knob at end of strap and slide upward. To remove: Press safety blades with fingernail and slide knob out.



Exposure and Light Value

Exposure is adjusted in accord with the existing lighting conditions (more exactly: in accord with the amount of light reflected by the subject). The light value serves as the measurement for correct exposure. It is ascertained from the exposure table or from an exposure meter, taking into account the

sensitivity of the film being used. It is then set on the light value scale of the camera. In this way both speeds and diaphragm openings are adjusted in relation to each other to provide correct exposure. Since the scales are firmly coupled, it is possible to select either a desired speed or diaphragm opening without further need to compensate for exposure.



Special Case: Time Exposure

In general you use the light value within the range of the evenly graduated speeds from 1/500th — 1 sec. If conditions are such that setting "B" is reached and it is necessary to close down the lens still more, the light value must be abandoned.

As an aid to determining the longer exposures with "B" setting, the green figures are provided (125 60 30 15 8 4 B [= 2] sec.). The correct figure will be found opposite the appropriate diaphragm value. Rule: observe the number in seconds above the desired diaphragm stop; uncouple the diaphragm and set the opening desired opposite the indicator, then expose for the number of seconds previously observed. (Uncoupling and moving the diaphragm control causes light values to become invalid with "B" setting.) Example: light value 4:

sec.	125	60	30	15	8	4	B (= 2)	1
diaphragm			22	16	11	8	5.6	4

Desired diaphragm 22 — observe required exposure 30 sec. — set diaphragm 22 opposite the indicator (under "B") — expose thirty seconds.

If the diaphragm stops at the mid-points between the green numbers, half values of exposure are obtained.

125	60	30	15	8	4	B (= 2) sec.
93	45	23	12	6	3	

The **Exposure Table** with its light values takes into consideration only the approximate light conditions and eliminates gross errors in exposing. In difficult cases, consulting an electric exposure meter is recommended. If the meter being used does not read in light values, it is necessary to transpose the speed and diaphragm readings separately to the camera. Thus the valid light value is indirectly set and sweeping up or down the speed or diaphragm scales can proceed in the prescribed manner.

General Exposure Rule: It is not always possible to pair a sufficiently fast shutter speed (to minimize effect of subject motion) with a small diaphragm opening (for greater depth of field). Obviously a compromise is required and it would be well to remember that under-exposure results in hopelessly lost shadow detail, whereas over-exposure may be compensated for to a great extent by proper processing. Therefore: a good general rule for exposure:

Always expose for the **shadows**,
rather a bit **more** than too little!

	A	B	C	D	E	
ASA						DIN
12	12	11	10	9	8	12
25	13	12	11	10	9	15
50	14	13	12	11	10	18
100	15	14	13	12	11	21
	±0	-1	-2			
	-1	-2	-3			

Explanations of the Picture Examples:

A: High mountains (snow) without foreground. Open beach. — B: Sport scenes. Bright streets and squares, open landscapes. — C: Landscapes with foreground. Groups in open air. — D: Groups in shade. Street scenes with shade. — E: Groups under trees, lightly shaded. Groups in glassroofed halls.

The Exposure Table

Subject brightness is easily judged and classified by means of the five standard lighting conditions represented by two illustrations each at the top of the table.


Film speed is indicated at the left by ASA figures and at the right by 1/1° DIN values.

Light value is found where brightness and film speed columns cross.

Light value adjustment, due to overcast sky or when sun is lower in the sky, is made by use of lower scale. Upper scale: full sunshine — lower scale: overcast sky. The length and intensity of your own body's shadow will give some idea of light conditions. The ability to estimate and choose the correct light values for various lighting conditions and time of day will soon come when you begin working on sunny and cloudy days.

Example: Color film 25 ASA (18° DIN), landscape with foreground, sunny, noontime (shadows short, no light value adjustment): light value 12. Available speed-diaphragm combinations: 1/250-f:4, 1/125-f:5.6, etc. Same subject in the afternoon, longer shadows, would require adjusted value, perhaps 12 — 1 = 11

Speed of Moving Subjects and Shutter Speeds

		Miles per hour approximately																
		3 mph		6 mph		12 mph		30 mph		60 mph		120 mph						
Example:		Pedestrians		Runners Moving air		Bicycles Windy		Light Athletics Stormy Surf		Automobiles Railway Trains Racing		Motor Racing						
																		
Distance (yards)	40		$\frac{1}{30}$	$\frac{1}{60}$	$\frac{1}{30}$	$\frac{1}{60}$	$\frac{1}{125}$	$\frac{1}{60}$	$\frac{1}{125}$	$\frac{1}{250}$	$\frac{1}{125}$	$\frac{1}{250}$	$\frac{1}{500}$	$\frac{1}{250}$	$\frac{1}{500}$	$\frac{1}{500}$	50	Distance (yards)
	15	$\frac{1}{30}$	$\frac{1}{60}$	$\frac{1}{125}$	$\frac{1}{60}$	$\frac{1}{125}$	$\frac{1}{250}$	$\frac{1}{125}$	$\frac{1}{250}$	$\frac{1}{500}$	$\frac{1}{250}$	$\frac{1}{500}$		$\frac{1}{500}$			25	
	8	$\frac{1}{60}$	$\frac{1}{125}$	$\frac{1}{250}$	$\frac{1}{125}$	$\frac{1}{250}$	$\frac{1}{500}$	$\frac{1}{250}$	$\frac{1}{500}$		$\frac{1}{500}$						12	
	4	$\frac{1}{125}$	$\frac{1}{250}$	$\frac{1}{500}$	$\frac{1}{250}$	$\frac{1}{500}$		$\frac{1}{500}$									6	

Moving Objects require short shutter speeds in order to be reproduced sharply. For this purpose the table contains computed minimum values depending on the factors: speed, distance and direction.

Taking distance: the yard column on the left stands for sufficient sharpness ($f/1400$), the yard column on the right for increased sharpness ($f/2000$). In spite

of these normally correct figures, it is often possible in actual photography to use longer shutter speeds. This is because the eye interprets slight unsharpness as giving an added impression of speed.

Long arrow = direction of movement.

A short arrow = taking direction (\nearrow up to 10° , \nearrow up to 30° and \uparrow up to 90° to the direction of movement).

Depth of Field Table

(distances in feet)

Diaphragm		4	5.6	8	11	16	22
Taking distance (in feet)	∞	78'11" — ∞	69'1" — ∞	49'5" — ∞	34'8" — ∞	25'3" — ∞	17'5" — ∞
	30'	21'10" — 48'2"	21 — 52'10"	19'9" — 94'6"	16'2" — 222'6"	13'10" — ∞	11'1" — ∞
	15'	12'8" — 18'5 1/4"	12'4 3/4" — 18'12"	11'7" — 21'4 1/2"	10'6 3/4" — 26'1 1/2"	9'6" — ∞	8'2" — 105'10"
	10'	8'11" — 11'4 3/4"	8'9 1/2" — 11'7 1/2"	8'4 1/2" — 12'5 1/4"	7'10" — 13'10 3/4"	7'3" — 16'4"	6'5 1/2" — 22'11 3/4"
	7'	6'5 1/2" — 7'7 3/4"	6'4 3/4" — 7'9"	6'2 1/8" — 8'1"	5'10 1/2" — 8'8 1/8"	5'6 5/8" — 9'6 1/2"	5'1" — 11'5 1/2"
	5'	4'8 3/4" — 5'3 3/4"	4'8 1/4" — 5'4 3/8"	4'6 7/8" — 5'6 1/4"	4'5" — 5'9 1/4"	4'2 3/4" — 6'1 3/4"	3'11 1/2" — 6'10 1/4"
	4'	3'9 7/8" — 4'2 1/4"	3'9 1/2" — 4'2 5/8"	3'8 5/8" — 4'3 3/4"	3'7 3/8" — 4'5 1/2"	3'6" — 4'8 1/8"	3'3 3/4" — 5' 3/4"
	3 1/2'	3'4 3/8" — 3'7 5/8"	3'4 1/4" — 3'8"	3'3 1/2" — 3'8 3/4"	3'2 1/2" — 3'10 1/8"	3'1 3/8" — 3'11 7/8"	2'11 5/8" — 4'3 3/8"
Diaphragm*	3.5	5.6	8	11	16	22	

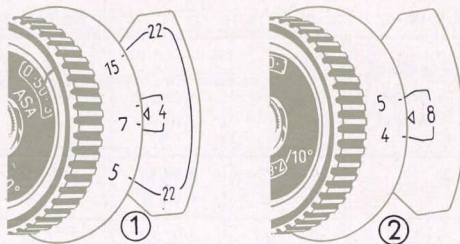
* If more critical definition is required — in order to insure perfect sharpness in giant enlargements — use the lower diaphragm figures to indicate the depth-of-field available.

Depth of Field Indicator

Both before and behind the plane of sharp focus there is always a relatively sharp zone. The width or depth of this zone can be artfully increased. It increases in depth when either closing down the lens or moving back from the object on which you have focused. Therefore it is evident that if the subject requires an extended depth of field, it is necessary to change the shutter speed-diaphragm combination to one with a smaller stop or to move back with the camera.

The Depth of Field Indicator consists of the special diaphragm scale located next to the distance scale and the distance scale itself. Two stroke marks outline the zone covered by each diaphragm opening. The marks are located on either side of the distance indicator ▼ showing "before" and "behind" focus. (For stop 3.5, use the inner and "behind" focus. (For stop 3.5, use the inner and for 5.6, the outer marking next to 4).

To Use: To find the limits of the depth of field, both before and behind the principal plane of focus, after focusing and after choosing the diaphragm opening. The beginning and end of the depth of field is read off on the distance scale. The sharp area lies between the distances bracketed by the marks extending from the diaphragm opening figure.



1. Example: Focusing on about 7.5 ft with diaphragm 4 produces a depth of field from about 7 to 8 ft. (The black dot between 7 and 10 ft means 8 ft.) If, on the other hand, stop f: 22 is used with the same distance setting, the depth now extends from about 5 to 15 ft. (Closing down increases depth of field.)

Considerable closing down always requires prolonging the exposure. It will be found that somewhat less stopping down can result in sufficient depth of field if the focusing is judiciously changed:

2. Example: The subject requires a sharp rendering of distances from 4 to 5 ft. (These limits can be determined exactly for any subject by focusing on nearest and furthest objects, meanwhile reading distances off scale.) Solution: Turn the focusing knob until both footage values lie opposite the same diaphragm stop. This gives the most favorable stop, in this case f: 8. (See page 34.)

Close-ups from $39\frac{1}{2}$ to $18\frac{1}{2}$ " with Rolleinar 1

Scale of focus in feet	Depth of field (in inches) $\frac{\text{behind}}{\text{in front}}$ of the object with diaphragm					Reproduction Size Approximately	Field covered (sq. in.)
	5.6	8	11	16	22		
∞	$3 \frac{3}{4}$ " $3 \frac{11}{32}$ "	$5 \frac{29}{32}$ " $4 \frac{23}{32}$ "	$8 \frac{27}{32}$ " $6 \frac{3}{32}$ "	$14 \frac{3}{16}$ " $8 \frac{9}{32}$ "	$22 \frac{27}{32}$ " $10 \frac{5}{8}$ "	1 16.5	$26\frac{3}{4}$ " x $26\frac{3}{4}$ "
30'	$3 \frac{5}{16}$ " $2 \frac{7}{8}$ "	$4 \frac{27}{32}$ " $3 \frac{15}{16}$ "	$7 \frac{5}{32}$ " $5 \frac{1}{8}$ "	$11 \frac{5}{8}$ " 7 "	$17 \frac{23}{32}$ " $9 \frac{1}{16}$ "	1 15	25" x 25"
15'	$2 \frac{11}{16}$ " $2 \frac{3}{8}$ "	$4 \frac{1}{32}$ " $3 \frac{7}{32}$ "	$5 \frac{23}{32}$ " $4 \frac{1}{8}$ "	$9 \frac{1}{8}$ " $5 \frac{13}{16}$ "	$13 \frac{1}{2}$ " $7 \frac{15}{32}$ "	1 13.5	22" x 22"
10'	$2 \frac{7}{32}$ " $1 \frac{31}{32}$ "	$3 \frac{11}{32}$ " $2 \frac{3}{4}$ "	$4 \frac{23}{32}$ " $3 \frac{17}{32}$ "	$7 \frac{17}{32}$ " 5 "	$10 \frac{29}{32}$ " $6 \frac{13}{32}$ "	1 12	$19\frac{1}{4}$ " x $19\frac{1}{4}$ "
7'	$1 \frac{25}{32}$ " $1 \frac{21}{32}$ "	$2 \frac{9}{16}$ " $2 \frac{9}{32}$ "	$3 \frac{3}{4}$ " $2 \frac{15}{16}$ "	$5 \frac{29}{32}$ " $4 \frac{3}{16}$ "	$8 \frac{3}{4}$ " $5 \frac{11}{32}$ "	1 10.5	$16\frac{7}{8}$ " x $16\frac{7}{8}$ "
5'	$1 \frac{3}{8}$ " $1 \frac{3}{16}$ "	$1 \frac{31}{32}$ " $1 \frac{9}{16}$ "	$2 \frac{3}{4}$ " $2 \frac{3}{32}$ "	$4 \frac{1}{8}$ " $3 \frac{5}{32}$ "	$6 \frac{7}{32}$ " $3 \frac{15}{16}$ "	1 9.5	15" x 15"
4'	$1 \frac{1}{32}$ " $\frac{31}{32}$ "	$1 \frac{3}{8}$ " $1 \frac{3}{8}$ "	$2 \frac{9}{32}$ " $1 \frac{25}{32}$ "	$3 \frac{5}{16}$ " $2 \frac{9}{16}$ "	$4 \frac{23}{32}$ " $3 \frac{11}{32}$ "	1 : 8.5	$13\frac{3}{8}$ " x $13\frac{3}{8}$ "
3.5'	$\frac{7}{8}$ " $\frac{25}{32}$ "	$1 \frac{5}{16}$ " $1 \frac{1}{4}$ "	$1 \frac{31}{32}$ " $1 \frac{21}{32}$ "	$2 \frac{25}{32}$ " $2 \frac{3}{8}$ "	$4 \frac{3}{32}$ " $2 \frac{31}{32}$ "	1 : 7.5	$11\frac{3}{4}$ " x $11\frac{3}{4}$ "

Close-ups from 19³/₄ to 12¹/₂" with Rolleinars 2

Scale of focus in feet	Depth of field (in inches) behind of the object with in front [diaphragm]				Reproduction Size Approximately	Field covered (sq. in.):
	8	11	16	22		
∞	$\frac{1}{1} \frac{13}{32}''$ $\frac{1}{1} \frac{1}{4}''$	$\frac{1}{1} \frac{31}{32}''$ $\frac{1}{1} \frac{21}{32}''$	$\frac{3}{2} \frac{1}{32}''$ $\frac{2}{2} \frac{5}{16}''$	$\frac{4}{3} \frac{13}{32}''$ $\frac{3}{3} \frac{1}{32}''$	1 8.5	133/8"x133/8"
30'	$\frac{1}{1} \frac{9}{32}''$ $\frac{1}{1} \frac{1}{8}''$	$\frac{1}{1} \frac{25}{32}''$ $\frac{1}{1} \frac{1}{2}''$	$\frac{2}{2} \frac{23}{32}''$ $\frac{2}{2} \frac{3}{32}''$	$\frac{3}{2} \frac{15}{16}''$ $\frac{2}{2} \frac{3}{4}''$	1 8	125/8"x125/8"
15'	$\frac{1}{1} \frac{5}{32}''$ $\frac{1}{1} ''$	$\frac{1}{1} \frac{5}{8}''$ $\frac{1}{1} \frac{3}{8}''$	$\frac{2}{1} \frac{7}{16}''$ $\frac{1}{1} \frac{29}{32}''$	$\frac{3}{2} \frac{17}{32}''$ $\frac{2}{2} \frac{17}{32}''$	1 : 7.5	113/4"x113/4"
10'	$\frac{1}{29} \frac{1}{32}''$ $\frac{29}{32}''$	$\frac{1}{1} \frac{15}{32}''$ $\frac{1}{1} \frac{7}{32}''$	$\frac{2}{1} \frac{3}{16}''$ $\frac{1}{1} \frac{23}{32}''$	$\frac{3}{2} \frac{3}{16}''$ $\frac{2}{2} \frac{5}{16}''$	1 7	11 x 11
7'	$\frac{29}{13} \frac{32}{16}''$ $\frac{29}{13} \frac{32}{16}''$	$\frac{1}{1} \frac{9}{32}''$ $\frac{1}{1} \frac{3}{32}''$	$\frac{1}{1} \frac{29}{32}''$ $\frac{1}{1} \frac{17}{32}''$	$\frac{2}{2} \frac{25}{32}''$ $\frac{2}{2} \frac{1}{32}''$	1 : 6.5	101/4"x101/4"
5'	$\frac{3}{11} \frac{4}{16}''$ $\frac{3}{11} \frac{4}{16}''$	$\frac{1}{7} \frac{1}{16}''$ $\frac{7}{8}''$	$\frac{1}{1} \frac{9}{16}''$ $\frac{1}{1} \frac{9}{32}''$	$\frac{2}{1} \frac{1}{4}''$ $\frac{1}{1} \frac{11}{16}''$	1 6	91/2"x91/2"
4'	$\frac{21}{19} \frac{32}{32}''$ $\frac{21}{19} \frac{32}{32}''$	$\frac{29}{25} \frac{32}{32}''$ $\frac{29}{25} \frac{32}{32}''$	$\frac{1}{1} \frac{11}{32}''$ $\frac{1}{1} \frac{3}{32}''$	$\frac{1}{1} \frac{29}{32}''$ $\frac{1}{1} \frac{1}{2}''$	1 5.5	85/8"x85/8"
3.5'	$\frac{19}{9} \frac{32}{16}''$ $\frac{19}{9} \frac{32}{16}''$	$\frac{13}{23} \frac{16}{32}''$ $\frac{13}{23} \frac{16}{32}''$	$\frac{1}{1} \frac{1}{4}''$ $\frac{1}{1} ''$	$\frac{1}{1} \frac{23}{32}''$ $\frac{1}{1} \frac{3}{8}''$	1 5	77/8"x77/8"

Circle of confusion $\equiv 1/1000$ of the focal length $f \equiv 60$ mm

Example: If the focusing mark, after focusing with Rolleinars 2, is at 10', then one obtains at diaphragm 11 a depth of field of 1 15/32" behind and 1 7/32" in front of the sharply focused object and the total zone of sharpness extends 2 11/16". With this setting field covered is 11" x 11". The scale of reproduction is 1/7 of the actual size.

Close-ups from $12\frac{1}{2}$ to $9\frac{1}{2}$ " with Rolleinar 3

Scale of focus in feet	Depth of field (in inches) ^{behind} of the object with _{in front} [diaphragm]			Reproduction Size Approximately	Field covered (sq. in.):
	11	16	22		
∞	$\frac{7/8''}{3/4''}$	$\frac{1 \ 5/16''}{1 \ 1/16''}$	$\frac{1 \ 13/16''}{1 \ 7/16''}$	1 : 5.6	$8 \ 3/4'' \times 8 \ 3/4''$
30'	$\frac{25/32''}{21/32''}$	$\frac{1 \ 5/32''}{1''}$	$\frac{1 \ 21/32''}{1 \ 5/16''}$	1 : 5.4	$8 \ 1/4'' \times 8 \ 1/4''$
15'	$\frac{23/32''}{21/32''}$	$\frac{1 \ 3/32''}{15/16''}$	$\frac{1 \ 9/16''}{1 \ 1/4''}$	1 : 5.2	$8'' \times 8''$
10'	$\frac{11/16''}{5/8''}$	$\frac{1''}{7/8''}$	$\frac{1 \ 15/32''}{1 \ 3/16''}$	1 : 4.9	$7 \ 3/4'' \times 7 \ 3/4''$
7'	$\frac{5/8''}{9/16''}$	$\frac{15/16''}{13/16''}$	$\frac{1 \ 11/32''}{1 \ 3/32''}$	1 : 4.6	$7 \ 1/2'' \times 7 \ 1/2''$
5'	$\frac{9/16''}{1/2''}$	$\frac{13/16''}{23/32''}$	$\frac{1 \ 3/16''}{1''}$	1 : 4.3	$6 \ 3/4'' \times 6 \ 3/4''$
4'	$\frac{15/32''}{7/16''}$	$\frac{23/32''}{21/32''}$	$\frac{1 \ 1/32''}{7/8''}$	1 : 4	$6 \ 1/4'' \times 6 \ 1/4''$
3.5'	$\frac{7/16''}{13/32''}$	$\frac{21/32''}{5/8''}$	$\frac{31/32''}{13/16''}$	1 : 3.8	$6'' \times 6''$

Color Conversion Filters

Modern color temperature meters will indicate the proper filter to use, taking into consideration the type of film and the prevailing light conditions. The most commonly encountered ranges of color temperature are also covered in the double table A + B, pages 27 and 29.

Example: Ektachrome daylight film, overcast sky which filter? Solution: 1 **Film** — Look up film type (brand) being used. (Ektachrome—daylight = upper part of page), follow the appropriate guide line to edge of page (5500 ° Kelvin), slide page 27 to the left until guide line A (5500 ° K) and B (page 29) meet. Hold pages in this position! 2. **Lighting** — Observe the type of lighting and its color temperature range (overcast = 6600—7000 °). 3. **Filter** — Select the filter indicated opposite the correct temperature range (in this case, R 2). Note that table B gives correction for light value (— 0.5) and the increase in required exposure (1.5 times). The guide lines hereunder listed require sliding page 27 somewhat further to the left.

Daylight

Film Type

Agfacolor T
Anscochrome
Ektachrome
Ferranacolor
Gevacolor
Ilford Colour D
Kodachrome
Pakolor

Artificial light

Anscochrome F
Ektachrome F
Kodachrome F

Agfacolor K
Ektachrome B
Gevacolor
Pakolor

Lighting



Clear blue sky:
in shadow



Deep shade,
clouds

Overcast



Cloudless,
sun to the side
Electronic flash



Blue flash bulbs
Sun 9:00 A.M.-3:00 P.M.



Sun before 9:00 A.M.,
after 3:00 P.M.



Clear, wire-filled
flash bulbs



Photo flood lights
SM and SF flash bulbs



Flood lights 100-500 w

° Kelvin

24000

19000

16000

14000

12000

11000

10000

9000

8200

7600

7000

6600

6200

5800

5500

5200

5000

4700

4500

4350

4150

4000

3800

3700

3550

3400

3300

3200

3100

3000

2900

2850

Rollei filters for black and white shots

Special compensation factors for light values are given when using filters, and these may be varied to suit type of film and lighting conditions.

Rollei Filter	Light value compensation		Application and effect
	Pan	Ortho	
Light yellow	-1	-1.5	Landscapes, snow, clouds. Renders yellow and green lighter, blue darker.
Medium yellow	-1.5	-2	
Light green	-1	-1.5	Landscapes, snow, clouds. Renders green lighter, red (complexion) and blue darker. For pan emulsions.
Green	-1.5	-2	
Orange	-1.5 to -3		Hazy distant views. Renders yellow-red lighter, blue darker, distant objects clearer.
Light red	-2 to -3.5		Hazy distant views. Gives stronger effects than orange filter.
Light blue	-0.5	-0.5	Artificial light. Renders red darker. For ultra-pan emulsions.
UV	-0.5	-0.5	High altitudes above 6000 feet. Seascapes. Eliminates ultra-violet rays which reduce contrast.
Infra-red	Exposure depends on the type of emulsion		Special filter for infra-red emulsions. Transmits dark red above 700 m μ and infra-red.
H 1	—		UV-Filter, especially designed for long distance color photography. Absorbs ultra-violet rays, subdues predominance of blue and cuts aerial haze in distance shots.

Speed of Photographic Emulsions

(Comparison values approximated)

ASA (BS)	DIN	Weston	General- Electric	Scheiner (Europe)
8	10 ⁰	6	9	21
10	11 ⁰	8	12	22
12	12 ⁰	10	15	23
16	13 ⁰	12	18	24
20	14 ⁰	16	24	25
25	15 ⁰	20	30	26
32	16 ⁰	24	36	27
40	17 ⁰	32	48	28
50	18 ⁰	40	60	29
64	19 ⁰	50	75	30
80	20 ⁰	64	100	31
100	21 ⁰	80	120	32
125	22 ⁰	100	150	—
160	23 ⁰	125	200	—
200	24 ⁰	160	250	—
250	25 ⁰	200	300	—
320	26 ⁰	250	400	—
400	27 ⁰	320	500	—
500	28 ⁰	400	600	—
650	29 ⁰	500	800	—
800	30 ⁰	650	900	—
1000	31 ⁰	800	1200	—

Filter



The illustrations indicate filter density and filter combination.

R 16		-1,5	3 x
R 13		-1,5	3 x
R 11		-1	2 x
R 7		-1	2 x
R 5		-0,5	1,5 x
R 2		-0,5	1,5 x
B 2		-0,5	1,5 x
B 5		-1	2 x
B 7		-1,5	3 x
B 11		-1,5	3 x
B 13		-2	4 x
B 16		-2,5	6 x

Flashlight technique

In modern flashlight technique the camera shutter takes over the task of firing the bulb electrically at the right moment. In this way instantaneous flash exposures are possible with a hand-held camera.

The Synchro-Compur shutter in the Rolleiflex is, for this purpose, equipped with electrical contact. The contact may be adjusted to the required delay of the flash lamps by means of the Synchro-lever:

When Synchro Lever is set		
Proper contact * is	M-Contact	X-Contact
Source of flash	Flash bulbs and electric firing flash powder (capsule flash)	Electronic flash and some flash guns with short duration of flash
* Time of contact is	16.5 thousandths of a sec. before shutter is half opened	Immediately before full shutter opening

The M contact stands for **full synchronization** for flash bulbs with a firing delay of 16.5 thousandths of a sec. The fastest shutter speeds up to 1/500 sec. can be used. Because of the delayed contact, the shutter always opens to catch the greatest volume of the light.

Selection of M-X lever position, applicable speed range and exposures can be learned from the instructions of the different flash light products. For the best known makes the table on page 32 contains the necessary information and the permissible shutter speeds.

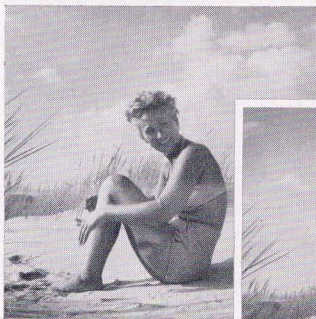
All commercially available flash guns and electronic flash units may be used. Current-carrying capacity of the contact when several flash lamps are connected simultaneously: 10 ampères at 24 volts for a period up to a maximum of 1/15th sec. For safety reasons one pole of the contact is grounded to the camera body (isolation-test: 700 volts).

The selection of flash lamp-type depends on the light output required by the subject. Many makes are available in three groups (normal, medium and high light output). The selection is dependent on the taking conditions, especially as to whether a room of shallow or great depth is to be illuminated.

The power of flash illumination decreases according to the square of the distance: i. e., an object six feet away receives only one-fourth the light as an object at three feet. Distance from flash to subject must therefore be carefully considered in selecting diaphragm opening. Lamp manufacturers supply easy to use guide numbers which are divided by the distance in feet to obtain the required diaphragm opening.

When using the built-in self-timer, only X-contact is employed. It is best to use 1/30th sec. with this contact setting for most lamps.

Flash as fill-in light: useful in brightening shadows whether due to insufficient illumination or to the






Sun



Sun + flash

fact that the picture is being taken "against-the-light" in full sunlight. The fill-in light must be kept at a lower intensity level than the main source of illumination, otherwise the strong flash will give an unnatural effect, not at all like daylight. Too strong a flash might even cause an apparent underexposure of the sky or the area not reached by the light. Electronic flash units are particularly well suited for use as fill-in lights when shooting color sports pictures. Use smaller lamps or keep them at greater distance.

Flash Contact and Permissible Shutter Speeds

FLASH LIGHT SOURCE		Contact	Shutter Speed						
Make	Type		Fastest	Slowest Recommended					
I. Electronic Flash		Without Relay (1/2000)	X	1/500	1/250	1			
II. Flash Lamps	General Electric Westinghouse	SM	X		1/60	1/60	1		
	Sylvania	SF							
	West, Japan	SM, SF, SS							
	General Electric	M 2	X	1/30	1/30	1			
	West, Japan	2 M, 12							
	Osram	XM 1, XM 5	M		1/500	1/60	1		
	Philips (Mazda)	PF 1 PF 5							
	General Electric Westinghouse	5, 8, 11, 22							
	West, Japan	0, 3, 5, 11, 22							
	Sylvania Press 25, 40, 0, Bantam 8								
		2							
	Philips (Mazda)	PF 60, PF 100				1/60	1/30	1	
	General Electric Westinghouse	50							
	Sylvania	3							
	General Electric Westinghouse West, Japan	6, 31							
	III. Capsule Flash		Average	M	1/125	1/30	1		

Explanation of the Table

The **"Contact"** column indicates the correct setting of the M-X lever for each lamp type.

The **"Shutter Speed"** column shows the permissible speed range.

Center: the recommended shutter speed includes practically the entire light output of the flash lamp. This assures the maximum illumination as well as the **smallest** diaphragm (for greater depth of field). The following applies as a general rule:

Use the standard recommended speed together with the correct setting of the M-X lever for the lamp in use.

Left: the fastest speed indicates the limit to which the shutter may be set. For lively action or sports subjects, the faster speeds are employed.

Right: the exposure time may be increased to the slowest speed (1 second or even time exposures), if, in addition to the flash, it is desired to make use of existing light. In such cases the total amount of light from all sources must be considered in choosing the diaphragm opening.

The Effective Exposure Time (as indicated in the table by means of colored ink) is not in each case identical to the shutter speed, but depends on the portion of the flash lamp light output utilized:

1 With X Contact the duration of the flash itself is actually shorter than any of the permissible shutter speeds. Therefore, the light duration of the flash (specified in parenthesis after the make) will be the actual, constant exposure time so that the selected diaphragm opening must be maintained even when using slower shutter speeds.

2. With M Contact the shutter speeds, from "fastest" to "recommended" fall within the duration of the flash: they therefore represent the actual exposure time and if the shutter speed is increased, the diaphragm must be opened accordingly. Only when slower shutter speeds are employed is the fully utilized light output equal to the actual exposure time, and this is the same as the recommended speed.

The illustration should make the utilization of the available flash light still more obvious: the white symbols represent the flash, and their size, the utilized light at the shutter speed employed.

Focusing for distant views

To obtain greatest depth-of-field on landscapes with foreground: turn focusing knob until ∞ mark is opposite diaphragm stop figure on depth-of-field scale. The second diaphragm stop figure on depth-of-field scale then indicates closest point still in focus. Example: ∞ at f: 11 will give depth-of-field from ∞ to approx. 12 ft.

A different method: Focus on foreground, set camera to twice this distance and read "economy" stop opposite ∞ mark. Example: Foreground 15 ft, set focus to 30 ft, depth-of-field 15 ft to ∞ at mid-point stop between f: 8 and f: 11

Snapshot settings

Unexpected picture opportunities or rapidly changing subject distances call for limiting focusing to one of the following three settings:

1/125 sec.

Diaphragm opening f : 8

Short distances
approx.
8 to 14 ft.

Medium distances
approx.
10 to 26 ft.

Long distances
approx.
16 ft. to ∞

10 ft.

15 ft.

30 ft.

Care of the Rolleiflex

A precision camera demands care in handling. Protect it against moisture, dust, sand, strong sunshine, hard blows or falls. Important for this purpose: the ever ready case. Proper camera protection is especially important on expeditions, in the tropics and for water sports. In addition it is recommended that a rubber or plastic bag be used as protection against water splashes, windblown sand and blizzards. Carry camera around neck to minimize transportation shocks. Keep all parts clear and clean lenses with a soft camel's hair brush or doeskin. Although the mechanism is not unduly sensitive to cold, some condensation may form on the lenses when the camera is brought into a warm room from outside in cold weather. Do not wipe off — let moisture evaporate. — In the tropics keep camera in air-tight case, when not in use.

In Case of Damage to the Rolleiflex

The task of repairing major or minor damage is the special province of the expertly trained mechanic. Franke & Heidecke maintain their own special workshop in which all repairs are done with precision at nominal prices. Abroad, apply to photo dealers and factory representatives for full information.

Rolleiflex 4 x 4 and the Practical Accessories*

Code:		Code:	
VYBAX	Rolleiflex 4 x 4/Xenar 3.5	BATAR	Rolleipol Polarising filter
BERVY	Eveready Case	BATNU	Rolleisoft Diffusion Disc 0
VYOB	Lens Hood	BATON	Rolleisoft Diffusion Disc 1
BAUNE	Rolleinar Lenses, set 1 (40-18 in.)	VYCOM	Leather Case containing:
BADOS	Rolleinar Lenses, set 2 (20-12 in.)		1 lens hood, 2 sets of Rolleinar lenses
BATRE	Rolleinar Lenses, set 3 (12 1/2—9 1/2 in.)		(1 and 2) and your choice of 5 filters
	Rollei Filters:	VYLEE	Leather Case as above, without contents
BAIHE	light yellow	VYSET	Leather Case containing:
BAIMI	medium yellow		1 lens hood and your choice of 2
BALIN	light green		filters
BAEEN	green	VYSOF	Leather Case as above, without contents
BAORA	orange	ETSIX	Leather Case with 6 color conversion
BAUBI	light red		filters
BABLA	light blue	ETVER	Leather Case as above, without contents
BAFIR	infrared	BASYN	Rolleiflash Attachment S for flashbulbs
BASKY	UV-protection-filter		with bayonet base
BAHAZ	H 1 filter (UV filter for daylight color	BAGLA	Rolleiflash Attachment G for flashbulbs
	film)		with glass base
	Rollei Color Conversion Filters:	BOXIN	Boxin Case for Rolleiflash
BARWO	R 2	CEKAB	Extension Cord for Flash-Attachment 10 ft.
BARFU	R 5 red colored	BLIKA	Flash Connecting Cord 32 in.
BAREL	R 11	FOFIX	Rolleifix Tripod Head
BAWOB	B 2	FOENG	Panorama Head
BAFUB	B 5 blue colored	VYGUZ	Shoulder Pad for Neck Strap
BAELB	B 11		

* to fit Xenar 3.5 bayonet size I.

To avoid errors when ordering accessories please specify camera number. Full information on the use of Rollei accessories in the booklet "The Practical Accessories"

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